16th International Congress on Immunodeficiency Diseases (ICID)

April 24-25, 2025
Children's Medical Center, Tehran, Iran
Hybrid Congress

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Research Center for Immunodeficiencies(RCID)


مرکز تحقیقات نقص ایمنی
Research Center for Immunodeficiencies


TEHRAN UNIVERSITY
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IPOPI
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PATIENT ORGANISATION
FOR PRIMARY IMMUNODEFICIENCIES


Biotest


inpharmus

Letter from the Organizers

Each year an International Congress on Pediatrics takes place in Tehran and several primary immunodeficiency diseases (PID) experts attended these scientific congresses in Iran during the last decade. In 2005, the first International Congress on Immunodeficiency Disorders was organized in Tehran. Several PID experts from different countries (USA, UK, Germany, France, Italy, Sweden, Spain, Japan, and Turkey) attended the congress to present an update in this field, whereas many scientists and researchers took part in this congress to increase their knowledge. This congress was a great event to further develop the bilateral scientific exchange of Iranian scientists with other researchers around the world. In October 2009, alongside the 21st International Congress of Pediatrics, a joint meeting on Immunodeficiency Diseases was established. That two days meeting was supported by the Jeffrey Modell Foundation (JMF). The great success of these conferences brought up the idea of organizing the Clinical Immunology, Allergy and Immunodeficiency Diseases Meeting this year, just before the 22nd International Congress of Pediatrics. This meeting, which was considered as the 46th J Project Meeting, is organized by the Research Group for Immunodeficiencies in collaboration with the Department of Pediatrics, Children's Medical Center Hospital, Tehran University of Medical Sciences. In 2011 -2024, as of established Research Center for Immunodeficiencies, the 4th-15th Meetings on Clinical Immunology and Immunodeficiencies were organized respectively, while several experts from the NIH and the University of Washington, US attended and presented talks at that meeting.

This year, we decided to organize the 16th Conference of ICID in a period of world PID week 2025 to focus on the link- ages of fundamental sciences and patient-oriented research under the main theme of clinical immunology and immunodeficiency diseases.

The major part of the audience includes general practitioners, pediatricians, and pediatric subspecialists; however, medical students, pediatric residents and fellows in the field of clinical immunology and infectious diseases are expected to actively participate in the meeting. We hope that the participants will have an unforgettable stay during this meeting in Tehran.

Best Regards,
Nima Rezaei

Introduction to Research Center for Immunodeficiencies (RCID)

Purposes of RCID, the best clinical research center of Iran in 2012, 2013 and 2015, is to improve access to early diagnosis and treatment for PIDs Diagnosis of new PIDs cases, Treatment and follow up of PIDs patients with a multidisciplinary approach, Genetic consulting for the family of affected individuals, Carrier detection and prenatal diagnosis, Arrangement of screening programs for diagnosis new PIDs patients (e.g., SCID) and also in selected, providing the up-to-date guidelines for diagnosis and treatment of PIDs.

We also aimed to promote collaborative research on PIDs executing multi-central studies regarding epidemiology, pathogenesis, diagnosis and treatment of PIDs, Providing the prevalence of PIDs in the country, Considering the results of research in the field of PID in the daily management of patients, Collaborating with other national and international organizations in charge of PIDs management around the world. PIDs are a heterogeneous group of inherited disorders, which are characterized by different defects in the development/function of the immune system. These defects render a patient susceptible to a variety of infectious diseases. The infections in PIDs can occur repeatedly, severely and atypically damaging the organs, reducing the quality of life. Up to date, over 500 PIDs have been phenotypically described. There is no clear estimation of the frequency of PIDs, however, it seems that many people carry a PID.
Early diagnosis and adequate therapies are the keys to survival and a better quality of life, while delays in diagnosis and /or inadequate management may lead to permanent organ damage and shortening lifespan.

Unfortunately, failure to recognize these conditions is still a major problem for clinicians around the world and diagnosis of patients with PIDs is associated with a considerable delay in children and adults.

Introduction to Research Center for Immunodeficiencies (RCID)

The high rate of consanguineous marriages in the Middle East region makes PIDs (especially autosomal recessive forms) more prevalent than those in Western countries. Indeed, many defective genes that underlie PIDs were firstly described in the patients who originated from this region. Lack of awareness among the medical community as well as under-developed infrastructural diagnostic and therapeutic facilities are the main problems encountered in the management of PIDs. However, timely diagnosis is not the whole story. PIDs need continuous care and sophisticated therapies.

Moreover, conducting research (which is an integral part of PIDs management), on gathered data/ samples from patient repositories not only improves the care of defined PIDs, but also opens the way to the clarification of ever unknown PIDs. To focus our research and understand the causes and complications of primary immunodeficiencies, and to translate the research into optimal diagnosis and treatment of these disorders, the Research Center for Immunodeficiencies (RCID) has been established in 2010. The center is dedicated to the development of improved therapies for patients with inherited disorders of the immune system.

Conference Committees

Congress President and Scientific Committee Chair: Nima Rezaei, MD, PhD

Head of Executive Committee: Reza Yazdani, PhD

Scientific Committee	International Scientific Committee	Executive Committee
Amir Ali Hamidieh	Jean-Laurent Casanova, MD, PhD	Arezoo Rezaei, M.Sc
Zahra Chavoshzadeh	Anne Puel, MD	Fereshte Salami, M.Sc
Reza Yazdani	Mirjam van der Burg, PhD	Zahra Hamidi Esfahani, M.Sc
Samin Sharafian	Andrew Gennery, MD	Alma Naseri, M.Sc
Mehrnaz Mesdaghi	Hassan Abolhassani, MD, PhD	Hanieh Mojtahedi, M.Sc
Tahereh Rostami	Ahmet Ozen, MD	Saba Fekrvand, MD
Sepideh Darougar	Ismail Reisli, MD	Niloufar Yazdanpanah, MD
Mohammad Hossein Eslamian	Elena Kovzel, MD	
Tooba Momen	Sevan Iritsyan, MD	
Mahnaz Sadeghi-Shabestari	Elif KARAKOÇ AYDINER, MD	
Mahshid Movahedi		

Conference Committees

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Scientific Committee	
Kian Darabi	Mahsa Rekabi
Aida Askari	Zahra Shahraki Ghadimi
Nasrin Behniafard	Marzieh Asgharyan
Anahita Razaghian	Akefeh Ahmadiafshar
Narges Eslami	Alireza Shafiei
Behzad Shakerian	Sare Sadat Ebrahimi
Shahrzad Fallah	Ahmad Vosughi Motlagh
Golnaz Eslamian	

Conference Schedule

SCIENTIFIC PROGRAMME

First Day: April 24th	
8:30-9:00: Session 1. Opening Session	
8:30-8:45	**Opening Speech** *Nima Rezaei, Tehran*
8:45-9:00	**Keynote Lecture: Human Auto-Antibodies Neutralizing Type 1 IFNs** *Jean-Laurent Casanova, New York*
9:00-10:15: Session 2. Virtual Lectures on Inborn Errors of Immunity	
9:00-9:15	**Human Inborn Errors of Fungal Diseases** *Anne Puel, France*
9:15-9:30	**Diagnostic Approaches and Newborn Screening for IEI** *Mirjam van der Burg, the Netherlands*
9:30-9:45	**Allogeneic Hematopoietic Stem Cell Transplantation in Immune Dysregulation** *Andrew Gennery, UK*
9:45-10:00	**MENA Registry Report on Actin-Related Inborn Errors of Immunity** *Hassan Abolhassani, Sweden*
10:00-10:15	**Bridging Treatment Approaches in ADA-SCID** *Elif Karackoc Aydiner , Turkey*
10:15-10:45	*Break Time*
10:45-13:00: Session 3. Diagnosis and Treatment of Inborn Errors of Immunity ***Moderators:*** *Arash Kalantari, Iraj Mohammadzadeh, Mehrnaz Mesdaghi*	
10:45-11:00	**The Impact of BCG Vaccination Status on The Hematopoietic Stem Cell Transplantation Outcomes Using Reduced Intensity Conditioning Regimen in Chronic Granulomatosis Disease Pediatric Patients** *Amir Ali Hamidieh, Tehran*

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11:00-11:15	**Pulmonary Presentations in IEIs** *Zahra Chavoshzadeh, Tehran*
11:15-11:30	**From Bench to Bedside: Reported Applications of Flow Cytometry in Diagnosis of Inborn Errors of Immunity** *Reza Yazdani, Tehran*
11:30-11:45	**Overview of Adenosine Deaminase Deficiency: Pathogenesis, Clinical Spectrum and Advances in Management** *Samin Sharafian, Tehran*
11:45-12:00	**Double-Negative T cells in Patients with Autoimmune Lymphoproliferative Syndrome-like Disease** *Mehrnaz Mesdaghi, Tehran*
12:00-12:15	**Reduced Toxicity Myelablative Allogenic Transplant for Hemophagoytic Lymphohistiocytosis** *Tahereh Rostami, Tehran*
12:15-12:30	**Practical Insights into the Diagnosis of IEI Using Flow Cytometry Panels in the Clinical Laboratory** *Ahmad Najafi, Tehran*
12:30-12:45	**Refractory or Recurrent Warts in Primary Immunodeficiencies** *Sepideh Darougar, Tehran*
12:45-13:00	**Clinical, Laboratory, and Genetic Characteristics of Patients with Natural Killer (NK) Cell Deficiencies** *Mohammad Hossein Eslamian, Hamadan*
13:00-14:00	*Lunch*
14:00-16:30: Session 4. Challenging Cases with Inborn Errors of Immunity ***Moderators:*** *Zahra Chavoshzadeh, Morteza Fallahpour, Taher Cheraghi*	
14:00-14:15	**Autoimmunity in Primary Immunodeficiency Disorders** *Tooba Momen, Isfahan*

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14:15-14:25	**Report a Case of IPEX Syndrome with Unusual Manifestations** *Mahnaz Sadeghi-Shabestari, Tabriz*
14:25-14:35	**A Rare Case of Wiskott-Aldrich Syndrome with a Multiloculated Tuberculous Brain Abscess – Case Report** *Mahshid Movahedi, Tehran*
14:35-14:50	**Biologic and Small Molecules in Polygenic Multifactorial Common Allergic Disorder & Inborn Errors of Immunity Causing Severe Allergic Disease** *Kian Darabi, Tehran*
14:50-15:00	**Hyper-IgE Syndrome: A Case Report** *Aida Askari, Shiraz*
15:00-15:10	**A Case Report of IKBKB Immune Deficiency with a Novel Mutation** *Nasrin Behniafard, Yazd*
15:10-15:20	**How Does Purine Nucleoside Phosphorylase (PNP) Deficiency Impact the Immune System? Presenting Two Cases with Two Novel Mutations** *Anahita Razaghian, Tehran*
15:20-15:30	**A Case of Activated Phosphoinositide 3-Kinase Delta Syndrome (APDS) Associated with Eosinophilic Esophagitis** *Narges Eslami, Tehran*
15:30-15:40	**A Case of Acquired Agammaglobulinemia Presented with Infertility** *Behzad Shakerian, Isfahan*
15:40-15:50	**Syndromic Features as a Warning Sign of Inborn Errors of Immunity: Report of Three Cases of Syndromic Combined Immunodeficiency** *Shahrzad Fallah, Tehran*
15:50-16:00	**Immune Infertility and Infertility Related to Immune Deficiency** *Golnaz Eslamian, Tehran*
16:00-16:30	*Questions and Answers*
17:15-18:45 Session 5. Online Workshop: Art Therapy *Elzette Fritz, South Africa*	

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Second Day: April 25th	
8:30-9:45: Session 6. Virtual Lectures on Inborn Errors of Immunity	
8:30-8:45	**New Horizons in Medicine: Unveiling Novel Treatments for Protein-Losing Enteropathies** *Ahmet Ozen, Turkey*
8:45-9:00	**Mechanisms of Autoimmunity in CD19 Deficiency** *Ismail Reisli, Turkey*
9:00-9:15	**Historical Review of Immunodeficiency Disorders in Armenia** *Sevan Iritsyan, Armenia*
9:15-9:30	**Epidemiology of IEI in the Republic of Kazakhstan** *Elena Kovzel, Kazakhstan*
9:30-9:35	**X-linked Lymphoproliferative Syndrome, Diagnosed After Treatment of Lymphoma** *Natallia Klimkovich, Belarus*
9:35-9:40	**Immunodeficiency and Precision Surgery: Bridging Clinical Gaps in Vulnerable Populations** *Shohreh Ghasemi, USA*
9:40-9:45	**Progressive Multifocal Leukoencephalopathy Among HIV-Positive People** *Sergei Rakovich, Belarus*
9:45-10:15	*Break Time*
10:15-12:00: Session 7. Associated Features of Inborn Errors of Immunity and Miscellaneous Topics ***Moderators:*** *Ahmad Bahrami, Sima Shokri*	
10:15-10:30	**Update in Common Variable Immune Deficiency** *Mahsa Rekabi, Tehran*

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10:30-10:45	**Agammaglobulinemia and Autoimmune Disease** *Zahra Shahraki Ghadimi, Zahedan*
10:45-10:55	**Does Vaccination Increase the Risk of Autoimmune Diseases?** *Marzieh Asgharyan, Tehran*
10:55-11:05	**X-Linked Agammaglobulinemia in a Patient with a Positive Family History and Different Presentations** *Akefeh Ahmadiafshar, Zanjan*
11:05-11:15	**Bone Marrow Transplantation in Primary Immunodeficiency: Report of Two Fatal Cases** *Alireza Shafiei, Tehran*
11:15-11:25	**DGAT1 is a Rare Fatal Protein-Losing Enteropathy** *Sare Sadat Ebrahimi, Kerman*
11:25-11:35	**Pregnancy Outcome and Renal Complications in a Female Patient with Common Variable Immunodeficiency (CVID)** *Ahmad Vosughi Motlagh, North Khorasan*
11:35-11:45	**Correlation Between Serum Amounts of Total IgE, C3, and C4 Levels in Patients Suffering from IgA Deficiency, With and Without Allergic Rhinitis Symptoms** *Hosseinali Khazaei, Zahedan*
11:45-12:00	*Question and answers*
12:00-13:00	*Lunch Time*
13:00-16:10: Session 8. Junior Presentations on Inborn Errors of Immunity ***Juries:*** *Zahra Chavoshzadeh, Reza Yazdani, Samin Sharafian, Mehrnaz Mesdaghi, Tahereh Rostami, Kian Darabi, Sepideh Darougar, Mohammad Hossein Eslamian, Tooba Momen, Mahnaz Sadeghi-Shabestari, Mahshid Movahedi, Aida Askari, Nasrin Behniafard, Anahita Razaghian, Narges Eslami, Behzad Shakerian, Shahrzad Fallah, Golnaz Eslamian, Mahsa Rekabi, Zahra Shahraki Ghadimi, Marzieh Asgharyan, Akefeh Ahmadiafshar, Alireza Shafiei, Sare Sadat Ebrahimi, Ahmad Vosughi Motlagh*	
13:00-13:05	**Management and Outcomes of SCID Patients at Mofid Children Hospital (Shahid Beheshti Medical University): A Retrospective Analysis (2022-2025)** *Mahdieh Karimizadeh*

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13:05-13:10	**Inborn Errors of Immunity with Atopic Phenotypes** *Sahar Seraj*
13:10-13:15	**Dock8 Deficiency Presented with a Nasopharyngeal Mass** *Saman Tavakoli*
13:15-13:20	**Familial Common Variable Immunodeficiency (CVID) with Multisystem Involvement: A Case Series** *Shabnam Salehi*
13:20-13:25	**Clinical and Genetic Diversity in Pediatric APDS: A Case Series of Nine Patients** *Samaneh Abdollahzadeh*
13:25-13:30	**Case Presentation of Leaky SCID** *Elham Moradian*
13:30-13:35	**CYBB Mutation in a Patient with CGD McLeod Phenotype** *Niloufar Yazdanpanah*
13:35-13:40	**A Rare CD70 Deficiency Patient Presenting with Recurrent Respiratory Infections and Interstitial Lung Disease** *Kiarash Saleki*
13:40-13:45	**A Novel Case of Primary Immunodeficiency: Congenital Ficolin-3 Deficiency in a Preterm Neonate** *Mahsa Hosseini Kakroudi*
13:45-13:50	**Familial Cold Autoinflammatory Syndrome 2 in a Pediatric Patient** *Alireza Javan*
13:50-13:55	**BCG Arthritis in a Patient with Severe Combined Immunodeficiency Disorder (SCID): A Case Report** *Amirreza Jabbaripour Sarmadian*
13:55-14:00	**Abatacept Treatment in Two Cases of LRBA Deficiency** *Hamidreza Hasanipour*

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14:00-14:05	**Severe Congenital Neutropenia Caused by SRP19 Gene Mutation: A Case Report and Literature Review** *Ayda Firouzabadi*
14:05-14:10	**A Case of Partial DiGeorge Syndrome Presented with Shingles** *Nafise Gholipor*
14:10-14:15	**Successful Treatment of Three Patients with Activated PI3K Delta Syndrome with Rapamycin** *Seyed Armin Tavakoli*
14:15-14:20	**A Report of Two Cases of CD27 Deficiency in One Family with Different Phenotypes** *Sina Fadai*
14:20-14:25	**Role of Toll-Like Receptors in the Growth and Progression of PIDs: Emerging Therapeutics?** *Parsa Alijanizadeh*
14:25-14:30	**Arteriovenous Hemangioma in a Young Female with Xeroderma Pigmentosum: A Rare Vascular Manifestation Associated with a DNA Repair Disorder** *Ali Rezvanimehr*
14:30-14:35	**Atypical Presentation of Ataxia Telangiectasia with Psoriasis: A Case Report** *Amir Amouzadeh*
14:35-14:40	**Machine Learning for Predicting Immunodeficiency Patterns in Autoimmune and Immunodeficiency Disorders; A Systematic Review** *Nazanin Abbasi*
14:40-14:45	**AI-Driven Diagnostic Innovations in Primary Immunodeficiency Diseases** *Kimia Kazemzadeh*
14:45-14:50	**A Case with Wiskott-Aldrich Syndrome** *Abtin Abdous*

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14:50-14:55	**Immune Dysregulation Following Haploidentical Hematopoietic Stem Cell Transplantation Pediatric Patients** *Mahsa Yousefpour*
14:55-15:00	**Clinical and Genetic Insights into Mendelian Pyoderma Gangrenosum: A Systematic Review of 120 Patients and a Case Report of a Patient with Leukocyte Adhesion Deficiency Type I** *Leyla Norouzi-Barough*
15:00-15:05	**Report of Bone Marrow Failure in Two Cases of ADA2 Deficiency** *Mahsa Iravani*
15:05-15:10	**Down Syndrome Associated with Immunodeficiency: A Case Report** *Maryam Sadat Seyedmehdi*
15:10-15:15	**Sweet Trouble: A Case Report on Immune Dysfunction in Congenital Disorders of Glycosylation** *Marjan Sadat Seyedmehdi*
15:15-15:20	**A Complex Immuno-Neurological Presentation in a Pediatric Patient with a Large Deletion in the ATM Gene** *Alma Naseri*
15:20-15:25	**Non-Infectious Problems of Interstitial Lung Disease (ILD) in Patients with Chronic Granulomatous Disease (CGD): A Systematic Review** *Tahereh Alipour*
15:25-15:30	**Beyond Immunodeficiency: The Neurodevelopmental Spectrum in Severe Combined Immunodeficiency** *Hesam Malekfarnood*
15:30-15:35	**Molecular Diagnosis of Chronic Granulomatous Disease: A CYBB Gene Mutation in an Iranian Patient** *Mahshid Shahmoradi*
15:35-15:40	**Investigation of CVID and Its Role in the Development of Secondary Infections** *Anahita Gharagozlou*

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SCIENTIFIC PROGRAMME

15:40-15:45	**Chemo and Bioinformatics-Driven Design: Tailoring Chemical Therapies for Primary Immunodeficiencies in Pediatric Patients** *Kosar Zolfaghari*
15:45-15:50	**Non-Coding RNAs in B Cell Maturation: A Review of Their Emerging Roles in Primary Immunodeficiency Disorders** *Tara Shahmoradi*
15:50-15:55	**Beyond the Genome: Quantum AI-Powered Immunomics—Pioneering the Frontiers of Personalized Immunity and Predictive Medicine in the Era of Synthetic Biology** *Saina Adiban Afkham*
15:55-16:00	**Inflammation-Related microRNA Alterations in Epilepsy: A Systematic Review of Human and Animal Studies** *Mohammad Javad Yousefi*
16:00-16:05	**Nobel Prize Winners in Immunology** *Reza Salyanchi*
16:05-16:10	**Clock Genes, Melatonin, and the Circadian Clock in the Pathogenesis of Psychiatric Disorders** *Saba Baghizadeh*
16:10-16:30	*Break Time*
16:30-17:00: Session 9. Concluding Remarks **Moderator:** *Nima Rezaei*	
16:30-17:00	*Concluding Remarks*

List of Scientific Committee of the 16th ICID and International Invited Speakers

Jean-Laurent Casanova, USA

The Rockefeller University

Anne Pule, France

Institute of Health and Medical Research, Paris (Inserm)

Mirjam van der Burg, Netherlands

Leiden University

Andrew Gennery, UK

Newcastle University

Hassan Abolhassani, Sweden

Karolinska Institutet

List of Scientific Committee of the 16th ICID and International Invited Speakers

Elif Karackoc Aydiner, Turkey

Marmara University

Ahmet Ozen, Turkey

Marmara University

Ismail Reisli, Turkey

Necmettin erbakan university

Elena Kovzel, Kazakhstan

Nazarbaev University

Sevan Iritsyan, Armenia

Yerevan State Medical University

First day: April 24th

Jean-Laurent Casanova, USA

Tehran: 8:45-9:00

1. St. Giles Laboratory of Human Genetics of Infectious Diseases, Rockefeller Branch, The Rockefeller University, New York, NY 10065, USA.
2. Laboratory of Human Genetics of Infectious Diseases, Necker Branch, INSERM U1163, Necker Hospital for Sick Children, 75015 Paris, EU, France.
4. Paris Descartes University, Imagine Institute, 75015 Paris, EU, France.
5. Pediatric Hematology-Immunology Unit, Necker Hospital for Sick Children, 75015 Paris, EU, France.
6. Howard Hughes Medical Institute, New York, NY 10065, USA.

Jean-Laurent Casanova, MD, PhD, is a Professor and Head of Laboratory at the Rockefeller University, Senior Attending Physician at the Rockefeller University Hospital, and Investigator of the Howard Hughes Medical Institute. He is a pediatrician and immunologist by training, and in practice, has become a human geneticist investigating infectious diseases. He discovered that life-threatening infectious diseases of childhood may be caused by single-gene inborn errors of immunity. He revealed single-gene mutations that create 'holes' in the immune system of children who are susceptible to specific infectious diseases, yet remain normally resistant to other infectious agents.

Dr. Casanova's research started with a simple question: what is it that makes some children develop a severe clinical illness in the course of infection while others exposed to the same microbe remain unharmed? In groundbreaking research, he discovered that single-gene lesions in children can confer selective vulnerability to certain infectious illnesses. Until these discoveries, single-gene lesions were only thought to underlie rare Mendelian traits, predisposing affected children to multiple infectious diseases.

Specifically, Dr. Casanova's team has identified single-gene mutations underlying mycobacterial diseases (mutations in *IFNGR1, IFNGR2, STAT1, IL12B, IL12RB1, NEMO, IRF8, CYBB, ISG15*), invasive pneumococcal disease (*NEMO, IKBA, IRAK4, MYD88, HOIL1, RPSA),* herpes simplex encephalitis *(UNC93B1, TLR3, TRAF3, TRIF, TBK1*), chronic mucocutaneous candidiasis (*IL17F, IL17RA, IL17RC, STAT1, ACT1*), dermatophytic disease (*CARD9*), Kaposi sarcoma (*OX40*), and severe flu (*IRF7*). These studies have important clinical implications, as they provide means for genetic counseling and a rationale to develop new therapeutic approaches based on an understanding of the host component of infectious diseases. These studies also have important biological implications, as they define the function of host defense genes *in natura*, i.e. in the setting of a natural ecosystem governed by natural selection.

First day: April 24th

Anne Pule, France

Tehran: 9:00-9:15

1. St. Giles Laboratory of Human Genetics of Infectious Diseases, Rockefeller Branch, The Rockefeller University, New York, NY 10065, USA.
2. Laboratory of Human Genetics of Infectious Diseases, Necker Branch, INSERM U1163, Necker Hospital for Sick Children, 75015 Paris, EU, France.
3. Paris Descartes University, Imagine Institute, 75015 Paris, EU, France.

Anne Puel, PhD, is an INSERM CR1 senior scientist in the Laboratory of Human Genetics of Infectious Disease (Necker Hospital, Imagine Institute, Paris). She is co-leading the team working on the genetic determinism of bacterial infections in children and leading the team working on the genetic determinism of severe fungal infections in humans. In particular, within the last five years, they have contributed in deciphering the pathogenesis of chronic mucocutaneous candidiasis (CMC) in primary immunodeficiencies, with the discovery of autoantibodies against IL-17 cytokines in autoimmune polyendocrinopathy-candidiasis-ectodermal dystrophy (APECED or APS-1) patients or impaired Th17 cells in autosomal dominant hyper IgE syndrome (AD-HIES) patients (J. Exp. Med. 2008 and J. Exp. Med. 2010). In 2011, they have discovered the first three genetic etiologies of CMC disease (CMCD) with autosomal recessive IL-17 receptor (IL-17RA) deficiency, autosomal dominant IL-17F deficiency and autosomal dominant STAT1 gain-of-function (Science 2011, J. Exp. Med. 2011). They are now investigating â€œidiopathicâ€•invasive fungal infections and have identified CARD9 as a key player in immunity to various invasive fungal infections (N. Engl J Med, in press, manuscript in preparation). Their project aims at deciphering the molecular and cellular mechanisms of human immunity to fungi. The elucidation of the pathogenesis of CMCD and idiopathic invasive fungal infections will also benefit patients and their families (molecular diagnoses and genetic counselling), and should help in developing new immunotherapeutic treatments for these diseases, in addition to antifungal agents.

First day: April 24th

Mirjam van der Burg, Netherlands

Tehran: 9:15-9:30

Laboratory for Paediatric Immunology, Willem-Alexander Children's Hospital, Leiden University Medical Center, Leiden, The Netherlands

Mirjam van der Burg, PhD, is an associate professor at Dept. of Pediatrics, Laboratory for Pediatric Immunology, Leiden University Medical Center. From 2014-2020, she was a board member of the European Society for Immunodeficiencies (ESID). The professional interest of the lab of Mirjam van der Burg is inborn Primary Immunodeficiencies (PID) of the adaptive immune system, especially antibody deficiencies, severe combined immunodeficiency (SCID) and DNA repair disorders. The research lines are directly related to these entities and aim for early diagnosis via newborn screening, studying the effect of the monogenetic defects on the immune system especially on B and T-cell differentiation and antigen receptor repertoire formation and immune reconstitution after hematopoietic stem cell transplantation.

First day: April 24th

Andrew Gennery, UK

Tehran: 9:30-9:45

Paediatric Haematopoietic Stem Cell Transplant Unit, Great North Children's Hospital, and Translational and Clinical Research Institute, Newcastle University, Newcastle upon Tyne, UK

Andrew Gennery, MD, PhD, is Professor in Paediatric Immunology and Haematopoietic Stem Cell Transplantation at the University of Newcastle upon Tyne and Honorary Consultant for the Northern Supra-Regional Bone Marrow Transplant Unit for SCID and related disorders, at the Great North Children's Hospital, Newcastle upon Tyne, clinically qualified and active. He spent a year of post-doctoral studies working with Anne Durandy and Alain Fischer in the Necker Hospital in Paris and was involved in the discovery of Cytidine Deaminase one of the first genes to be discovered involved in class switch recombination and somatic hypermutation.

He has been a consultant in Newcastle for 19 years. He has pioneered paediatric immunology research at the university. His research interests include immunoreconstitution following haematopoietic stem cell transplant for primary immunodeficiency, long-term outcomes of transplantation for primary immunodeficiency (and in particular Chronic Granulomatous Disease and Severe Combined Immunodeficiency), DNA repair disorders and their appropriate treatment and Di George Syndrome. More recently, he has adapted new methods of T cell depletion for patients with primary immunodeficiency, and established extracorporeal photopheresis for the treatment of children with graft versus host disease. He has discovered important mechanistic insights relating to the action of extracorporeal photopheresis. He is exploring the use of defibrotide for treatment of non-VOD endothelial cell activation disorders post-HSCT.

First day: April 24th

Hassan Abolhassani, Sweden

Tehran: 9:45-10:00

Division of Clinical Immunology, Department of Laboratory Medicine, Karolinska Institute at Karolinska University Hospital Huddinge, Stockholm, Sweden.

Hassan Abolhassani, MD, PhD, is currently an assistant professor and team leader of PID research in Prof. Pan-Hammarström's lab (KI, QPH). He is the president of the Middle East and North Africa Registry on Inborn Errors of Immunity (MENA-IEI), one of the largest PID cohorts worldwide (more than 17000-patients) performing translational research on immune defects and specific PID with B cell defects and immune dysregulation. He is a steering member of the J Project experts (professional network on PID and related diseases in East-European countries) and a distinguished clinical immunologist collaborator of Global Burden of Disease (GBD).

Additionally, he was a previous leading member (2019-2021) and currently is the communication focus group leader (2022-now) of the junior faculty at KI. Within a long-term collaboration with the Center for Vaccine Equity, and Task Force for Global Health, he is coordinating the guidelines for diagnosis, treatment, transplantation and vaccinations in PID patients. Fortunately, he is honored as top 1% of highly cited scientific researchers in the field of Immunology, Essential Science Indicators (ESI, Web of Science) and the World's Top 2% widely cited scientists based on Stanford University ranking (Scopus/Elsevier database, since 1788 until now)

First day: April 24th

Elif Karackoc Aydiner, Turkey

Tehran: 10:00-10:15

Division of Pediatric Allergy and Immunology, Marmara University, School of Medicine, Istanbul, Turkey.

Elif Karakoç Aydıner, MD, graduated from Cerrahapasa University, Faculty of Medicine in 2001. She has completed her residency of Pediatrics in 2006 and fellowship at Pediatric Immunology and Allergy in 2011 at Marmara University. She has been working at Marmara Medical Faculty, Department of Pediatrics since 2012 as a lecturer. She is experienced in diagnosis and treatment of primary immune deficiency disorders and allergic diseases of childhood. She has more than 100 publications and received more than 2000 citations with 20 h index value. Recently, Dr. Karakoç Aydıner is working on projects focused on personalised immunoglobulin replacement and targeted therapies in immune deficiencies in addition to natural history and immunotherapy of food allergies.

First day : April 24th

Amir Ali Hamidieh, Teharn

Tehran: 10:45-11:00

Pediatric Cell and Gene Therapy Research Center, Gene, Cell & Tissue Research Institute, Tehran University of Medical Science, Tehran, Iran.

The Impact of BCG Vaccination Status on The Hematopoietic Stem Cell Transplantation Outcomes using Reduce Intensity Conditioning Regimen in Chronic Granulomatosis Disease Pediatric Patients

Introduction: Recent advances in hematopoietic stem cell transplantation (HSCT) have improved clinical outcomes; however, various factors continue to influence HSCT success, especially vaccination in immunocompromised patients who receive vaccination at birth. While several studies have investigated the efficacy of vaccines in Chronic Granulomatous Disease (CGD) patients, the specific impact of vaccination on HSCT outcomes in these patients have not yet been studied. This study aimed to address an important gap in the current literature by investigating the effects of BCG vaccination on HSCT outcomes in patients with CGD.

Participants and Methods: In this prospective study, 24 pediatric patients with CGD were enrolled from 2016 to 2022, all of whom received the same reduced-intensity conditioning (RIC) regimen before HSCT. Of these, 12 patients received the Bacillus Calmette-Guérin (BCG) vaccine, while 14 patients were not vaccinated.

Results: Contrary to other studies, our results showed that CGD patients who received the BCG vaccine before HSCT experienced varying degrees of BCGosis and BCGitis. Specifically, 8 patients showed symptoms of BCGosis, while 4 patients showed symptoms of BCGitis. In addition, our findings revealed no significant differences in graft-versus-host disease (GvHD) and other complications of HSCT between BCGvaccinated and non-BCG-vaccinated CGD patients, although the overall survival (OS) rate was lower in the vaccinated group. This may be attributed to the reduced-intensity conditioning regimen applied to all patients which can balance HSCT outcome in CGD patients.

Discussion and conclusion: Our study emphasizes the importance of screening and diagnosing immunodeficient patients at birth, especially in developing countries where BCG vaccine is administered at birth, as post- vaccination complications can significantly affect HSCT outcomes and subsequent treatments. BCG vaccination can significantly affect HSCT outcomes and subsequent treatments.

First day : April 24th

Zahra Chavoshzadeh, Tehran

Tehran: 11:00-11:15

Department of Allergy, Mofid Children Hospital, Shahid Beheshti University of Medical sciences, Tehran, Iran

Pulmonary Presentations in IEIs

Human inborn errors of immunity (IEI) caused by monogenic germline mutations resulting in loss or gain of function of the encoded protein. They now comprise 555 IEI and17 phenocopies with 504 different gene defects listed in the 2024 International Union of Immunological Societies (IUIS) classical classification. Genetic defects that impair immune function often have lung disease as the initial and/or primary manifestation. Although lung damage in IEI usually ascribed to recurrent infections, contributions from potentially targetable autoimmune and inflammatory pathways are now increasingly recognized.

When considering pulmonary disease patterns in IEI, it is important first to understand the lung compartments that can affected. These compartments include the airways, alveolar space, interstitial, vasculature, and the pleural space. Lung patterns that can be a presentation of IEI includes; bronchiectasis due to recurrent infections, bronchiolitis obliterans, follicular bronchiolitis, Interstitial lung disease, granulomatous lymphocytic ILD, Lung fibrosis, ground-glass opacities (GGOs), recurrent pneumothorax, polyserositis, pulmonary hypertension, diffuse alveolar hemorrhage.

In different types of IEI based on IUIS classification, lung patterns sometimes can be specific such as granulomatous lymphocytic ILD that is a noninfectious complication of common variable immunodeficiency, recurrent pneumothorax caused by large pulmonary cysts in FNIP1 deficiency. Although chest X-rays are useful in the initial evaluation, high-resolution computed tomography (HRCT) is the standard modality to investigate lung disease patterns in IEI. Detailed immunologic and genetic workup is often required to have a precise IEI diagnosis and to guide targeted therapies. Moreover, it is important to consider that because IEI encompasses monogenic and nonmonogenic disorders (eg, CVID), the use of genetic testing in the diagnosis of IEI involving the lungs should always be combined with a thorough, multidisciplinary clinical evaluation and functional immunologic studies.

In conclusion, identifying lung diseases caused by IEI requires a high index of suspicion and a multidisciplinary approach.

First day : April 24th

Reza Yazdani, Tehran

Tehran: 11:15-11:30

Research Center for Immunodeficiencies, Pediatrics Center of Excellence, Children's Medical Center, Tehran University of Medical Sciences, Tehran, Iran. 2. Primary Immunodeficiency Diseases Network [PIDNet], Universal Scientific Education and Research Network [USERN], Tehran, Iran.

From Bench to Bedside: Reported Applications of Flow Cytometry in Diagnosis of Inborn Errors of Immunity

Inborn errors of immunity (IEI; primary immunodeficiencies [PIDs]) encompass a heterogeneous inherited group of over 500 immune disorders caused by genetic defects. Accurate and timely diagnosis of these conditions is essential for guiding appropriate management and improving patient outcomes. Flow cytometry, a powerful and versatile analytical technique, has emerged as a cornerstone in the diagnostic evaluation of IEIs. Recognizing IEI disorders is commonly challenging and needs determining underlying genetic defects of these disorders. Whole Exome Sequencing (WES) and whole genome sequencing (WGS) allow the identification of genetic defects in IEI patients. Although WES and WGS are useful in identifying causative genes and finding novel genetic defects in new IEI candidate genes, these methods are time-consuming and expensive, and not readily available in resource-constrained settings.

This abstract presents a concise overview of the evolving role of flow cytometry in the clinical immunology laboratory, highlighting its transition from a research-focused tool to a frontline diagnostic modality. By enabling detailed immunophenotyping and functional assessment of immune cells, flow cytometry facilitates the identification of characteristic cellular signatures and immunological dysfunctions associated with various IEIs. This presentation will report findings from recent literature and institutional experience, underscoring the impact of flow cytometry in diagnosing key categories of IEIs, including severe combined immunodeficiency (SCID), combined immunodeficiencies with syndromic features, antibody deficiencies, phagocytic disorders, and immune dysregulation syndromes.

First day: April 24th

Samin Sharafian, Tehran

Tehran: 11:30-11:45

Department of Allergy and Clinical Immunology, Mofid Children's Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Overview of Adenosine Deaminase Deficiency: Pathogenesis, Clinical Spectrum and Advances in Management

In the ESID registry investigation, 12% of patients exhibited syndromic manifestations at the initial presentation of their illness while 10% presented exclusively with these manifestations without infectious or autoimmune symptoms.

Here we present three cases with different manifestations that fall into this category. First case, a 16-year-old boy from consanguineous marriage presented with syndromic face and history of mastoiditis and recurrent otitis media and ventricular septal defect. He has developmental delay specially in language and speech area. In blood test, presence of lymphopenia was noted. immunological work up and Fluorescence In Situ Hybridization (Fish) study carried out. CD4 Absolut count and CD45 RO positive CD4 T cells were lower than normal. fish study showed the chromosome 22q11.2 deletion. the patient was diagnosed with DiGeorge anomaly. Case 2, a 5- year- old boy from unrelated parents presented with syndromic face and history of hospitalization due to pneumonia and hemolytic jaundice. splenomegaly detected in physical examination. immunological work up performed and showed low IgG level, reverse CD4 to CD8 ratio, low natural killer cells And low response to mitogen in lymphocyte transformation test. Whole exome sequencing showed a heterozygote mutation in KMT2 gene which is the cause of kabuki syndrome.
Case 3, an 8 -year-old boy from related parents with history of hospital admission because of diarrhea, bacterial pneumonia and renal failure referred to immunology clinic. He was hypothyroid. Short stature, hypertension, and dysmorphic face were notable on physical examination. Lymphopenia, hypogammaglobulinemia and increased IgE level were evident in the blood sample.CD flowcytometry revealed reverse CD4/CD8 ratio and low CD56 Absolut count. whole exome sequencing showed mutation in SMARCAL1 gene which is the cause of Schimke immuno-osseous dysplasia.

In this article, we highlight the associated symptoms that are presented in this specific group of immunocompromised patients and physicians should be aware of these symptoms during management of patients.

First day : April 24th

Mehrnaz Mesdaghi, Teharn

Tehran: 11:45-12:00

Shahid Beheshti University of Medical Sciences, Tehran, Iran

Double-Negative T cells in Patients with Autoimmune Lymphoproliferative Syndrome-like Disease

Background: Elevated level of double-negative T (DNT) cells is a historical hallmark of autoimmune lymphoproliferative syndrome (ALPS) diagnosis. However, the peripheral blood level of DNT cells might also be compromised in autoimmune lymphoproliferative immunodeficiencies (ALPID) other than ALPS, inattention to which would increase the delay in diagnosis of the underlying genetic defect and hinder disease-specific treatment.

Methods: This cross-sectional study recruited patients suffering from ALPID (exclusion of ALPS) with established genetic diagnosis. Following thorough history taking, immunophenotyping for lymphocyte subsets was performed using flowcytometry.

Results: Fifteen non-ALPS ALPID patients (60% male and 40% female) at a median (interquar-tile range: IQR) age of 14.0 (7.6–21.8) years were enrolled. Parental consanguinity and family history of immunodeficiency were present in 8 (53.3%) patients. The median (IQR) age at first presentation, clinical and molecular diagnosis were 18 (4–36) months, 8.0 (4.0–17.0) years, and 9.5 (5.0–20.9) years, respectively. Molecular defects were observed in these genes: LRBA (3, 20%), CTLA-4 (2, 13.3%), BACH2 (2, 13.3%), AIRE (2, 13.3%), and FOXP3, IL2Rβ, DEF6, RASGRP1, PIK3CD, and PIK3R1 each in one patient (6.7%). The most common manifestations were infec-tions (14, 93.3%), autoimmunity (12, 80%), and lymphoproliferation (10, 66.7%). The median (IQR) count of white blood cells (WBCs) and lymphocytes were 7160 (3690–12,600) and 3266 (2257–5370) cells/mm3, respectively. The median (IQR) absolute counts of CD3+ T lymphocytes and DNTs were 2085 (1487–4222) and 18 (11–36) cells/mm3, respectively. Low lymphocytes and low CD3+ T cells were observed in 3 (20%) patients compared to normal age ranges. Only one patient with FOXP3 mutation had DNT cells higher than the normal range for age.

Conclusions: Most non-ALPS ALPID patients manifested normal DNT cell count. For a small subgroup of patients with high DNT cells, defects in other IEI genes may explain the phenotype and should be included in the diagnostic genetic panel.

First day: April 24th

Tahereh Rostami, Tehran

Tehran: 12:00-12:15

Hematologic Malignancies Research Center, Research Institute for Oncology, Hematology and Cell Therapy, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran.

Reduced Toxicity Myelablative Allogenic Transplant for Hemophagoytic Lymphohistiocytosis

Hemophagocytic lymphohistiocytosis (HLH) is a life-threatening hyperinflammatory syndrome characterized by uncontrolled proliferation of activated macrophages and lymphocytes, leading to a cytokine storm. It is classified into primary (genetic) and secondary (acquired) forms. In primary HLH, hematopoietic stem cell transplantation (HSCT) remains the sole curative approach to replace the defective immune system and mitigate the high risk of disease reactivation.

Conditioning regimen intensity is a pivotal determinant of HSCT success in HLH. While myeloablative conditioning (MAC) carries significant risks of transplant-related morbidity and mortality, reduced-intensity conditioning (RIC) regimens reduce toxicity and improve survival rates. However, RIC is associated with mixed chimerism (30–75%), which may predispose patients to HLH reactivation.

This presentation will critically analyze the advantages and limitations of MAC and RIC regimens, focusing on their impact on engraftment, toxicity, and long-term outcomes in HLH.

First day : April 24th

Ahmad Najafi, Tehran

Tehran: 12:15-12:30

SabaBiomedicals Science-Based Company, Tehran, Iran.

Practical Insights into the Diagnosis of IEI Using Flow Cytometry Panels in the Clinical Laboratory

Inborn errors of immunity (IEI), a heterogeneous group of monogenic disorders, present with a wide spectrum of clinical manifestations resulting from defects in innate and/or adaptive immune pathways. Prompt and accurate diagnosis is essential for guiding therapeutic interventions and improving prognosis. Flow cytometry has emerged as an indispensable diagnostic modality, enabling high-resolution immunophenotypic profiling of peripheral blood and bone marrow immune cells.

This presentation a focused overview of practical strategies for implementing diagnostic flow cytometry panels in clinical laboratories, with an emphasis on tailored marker selection, gating strategies, and interpretation algorithms for the identification of cellular and functional immune defects. Specific attention will be given to T, B, and NK cell subset analysis, assessment of recent thymic emigrants and memory populations, evaluation of helper T subsets, and screening for disorders affecting cytotoxic function and regulatory T cells. Also, B cell subsets analysis, particularly the quantification of switched memory & non-switched memory B cells and CD21lo B cells, which are in evaluation of CVID and related disorders. Additionally, the role of innate immune panels – for investigation of LADs and CGD diseases – will be discussed. Representative clinical cases will be presented to illustrate the utility of flow cytometry in the differential diagnosis of IEI and to highlight common diagnostic pitfalls and technical considerations.

First day: April 24th

Sepideh Darougar , Tehran

Tehran: 12:30-12:45

Department of Pediatrics, Tehran Medical Sciences Branch, Islamic Azad University, Tehran, Iran

Refractory or Recurrent Warts in Primary Immunodeficiencies

Warts are caused by Human Papilloma Virus (HPV) infection. There are over 200 subtypes of HPV, which infect cutaneous and mucosal tissues. Normally, these are cleared by intact cellular immunity. However, the exact cellular immunity mechanism has not been clearly elucidated yet.

Patients with recurrent and refractory warts may have an underlying primary immunodeficiency (PID) which predisposes them to HPV infection, such as WHIM syndrome (Warts, Hypogammaglobulinemia, Infections, and Myelokathexis), Epidermodysplasia verruciformis, Leukocyte adhesion deficiency I, Dock 8 mutations, and etc. Patients with undiagnosed inherited or acquired immunodeficiencies may demonstrate refractory or more severe HPV infections. In these cases, early recognition of the underlying PID with its specific genetic defect may enhance the initiation of the treatment and prevent associated morbidity and mortality. One of the most common morbidities is cervical cancer which may have a fatal course if not treated timely. This type of cancer commonly occurs in patients suffering from primary immunodeficiencies.

Accurate evaluations for proper diagnosis and treatment of the underlying primary immunodeficiencies in a timely manner to better management of disseminated refractory warts is of a paramount importance.

First day : April 24th

Mohammad Hossein Eslamian, Hamadan

Tehran: 12:45-13:00

Hamadan university of medical science, Hamedan, Iran

Clinical, Laboratory, and Genetic Characteristics of Patients with Natural Killer (NK) Cell Deficiencies

Natural Killer (NK) cell deficiencies, classified under primary immunodeficiency disorders, can present as either quantitative (reduced cell numbers) or functional (impaired activity) defects. NK cells play a crucial role in early defense against viral infections and tumor surveillance.

Clinical Features: Patients with NK cell deficiencies often present with severe or recurrent viral infections, particularly those caused by herpesviruses such as EBV and CMV, widespread warts, frequent respiratory infections, and in some cases, an increased susceptibility to malignancies. Autoimmune manifestations may also be present in certain individuals.

Laboratory Findings: Typical findings include a decreased number of NK cells on flow cytometry or impaired NK cell cytotoxic function in functional assays. These abnormalities may be accompanied by other immunologic deficiencies, such as low levels of immunoglobulins (e.g., IgG or IgA).

Genetic Features: Mutations in genes such as GATA2, MCM4, FCGR3A, PRF1, and UNC13D have been associated with NK cell deficiencies. These genetic defects can be inherited and may present as isolated immunodeficiency or as part of broader syndromes like hemophagocytic lymphohistiocytosis (HLH).

Conclusion: Recognition of the clinical and diagnostic features of NK cell deficiencies is vital for preventing severe complications such as life-threatening infections and cancers. Early diagnosis through immunological assessments and genetic testing can significantly improve disease management and outcomes.

First day : April 24th

Tooba Momen, Isfahan

Tehran: 14:00-14:15

Department of Allergy and Clinical Immunology, Child Growth and Development Research Center, Research Institute for Primordial Prevention of Non-communicable Disease, Isfahan University of Medical Sciences, Isfahan, Iran

Autoimmunity in Primary Immunodeficiency Disorders

Primary immunodeficiencies are characterized mostly by susceptibility to infections, however variable autoimmune manifestations are observed in these patients.

The pathogenesis of autoimmunity in patients with immunodeficiency can be altered germ center reactions, impaired central and peripheral lymphocyte negative selection, uncontrolled lymphocyte proliferation, ineffective cytoskeletal function, innate immune defects, and also defective clearance of the infectious agents play an important role.

The concomitance of immunodeficiency and autoimmunity appears to be paradoxical and leads to difficulty in the management of autoimmune complications in PID patients. These multiple mechanisms are associated with diverse clinical phenotypes that cause delay in diagnosis and starting optimal treatment. Therefore, management of autoimmunity in patients with PID requires special considerations because dysregulations and dysfunctions of the immune system along with persistent inflammation impair the process of diagnosis and treatment.

During the past years, increased awareness and use of genetic screening, confirmatory functional studies and immunological biomarkers has been helpful in early recognition of PIDs among patients with autoimmunity. Immunologists should understand the basis and manifestations of autoimmunity in PID patients to be able to care for these patients more effectively.

First day : April 24th

Mahnaz Sadeghi-Shabestari, Tabriz

Tehran: 14:15-14:25

Tabriz University of Medical Sciences, Tabriz, Iran

Report a Case of IPEX Syndrome with Unusual Manifestations

Background: IPEX syndrome, is a rare genetic disorder and characterized by systemic autoimmunity, which includes the triad of enteropathy, endocrinopathy and Eczema.
This rare disorder which is inherited in an X-linked recessive manner, affects an estimated 1 in 1.6 million people and results from mutation of the transcriptional activator gene, FOXP3, which causes regulatory T-cell dysfunction and a subsequent autoimmune disorder.
The majority of patients have skin disease that manifests as severe atopic dermatitis. However, erythroderma, exfoliative dermatitis, psoriasis-like lesions, and pemphigus nodularis have also been observed.
Variation in levels of immunoglobulins and Neutrophil activity and complement levels are noted. Flow cytometry of peripheral blood CD4+ CD25+ FOXP3+ usually reveals decreased T cells in patients with IPEX syndrome.
Other clinical and laboratory effects are also variably present, including thrombocytopenia, lymphadenopathy, tubular nephropathy, hypothyroidism, and alopecia. Cachexia, small size, and poor weight gain related to failure to thrive are noted.

Diagnosis and Prognosis: Molecular genetic testing for immune dysfunction, polyendocrinopathy, enteropathy, X-linked (IPEX) syndrome can be performed by DNA sequencing of the FOXP3 gene and mutation analysis.
The prognosis of IPEX is poor with most patients dying by age 2 years. Sepsis and complications from failure to thrive are the most common causes of death.

Treatment: If left untreated, it is often fatal by the age of 2 or 3. A bone marrow transplant is generally considered the best treatment option. Currently, the primary therapeutic approach for IPEX syndrome is allogeneic hematopoietic stem cell transplantation (HSCT).
Here we report a 12-year-old boy with diabetes mellites, hypothyroidism, and chronic diarrhea without any skin manifestations and diagnosis of IPEX that is waiting for HSCT.

First day : April 24th

Mahshid Movahedi, Tehran

Tehran: 14:25-14:35

Division of Allergy and Clinical Immunology, Department of Pediatrics, Children's Medical Center, Tehran University of Medical Sciences, Tehran, Iran.

A Rare Case of Wiskott-Aldrich Syndrome with a Multiloculated Tuberculous Brain Abscess – Case Report

Introduction: Wiskott-Aldrich syndrome (WAS) is an X-linked recessive condition with a triad of clinical features, severe thrombocytopenia, eczema, and immunodeficiency-whose severity is such that the affected children experience recurrent infections. Tuberculosis is one of the infections that is prevalent among immunosuppressed patients and leads to high mortalities.

Case Report: A two-year-old boy presented with jaundice and thrombocytopenia at three days; at two weeks, he presented with eczematous lesions as well. Genetic analysis was done to confirm WAS (by WAS gene sequencing). This resulted in symptomatic management. During pre-transplant workup, a brain CT scan showed a notable multiloculated tuberculosis abscess in the occipital lobe and mass effect with significant edema and midline shift.

Conclusion: This case illustrates the diagnostic challenge of cerebral tuberculosis in WAS patients, the immunodeficiency of whom renders management complex, with a potential risk of bleeding. It illustrates the need for vigilant suspicion of opportunistic infection and multidisciplinary management to achieve an optimal balance between control of infection and the hazards of thrombocytopenia.

First day: April 24th

Kian Darabi, Tehran

Tehran: 14:35-14:50

Sepehr Clinic of Allergy, Tehran, Iran

Biologic and Small Molecules in Polygenic Multifactorial Common Allergic Disorder & Inborn Errors of Immunity Causing Severe Allergic Disease

Most of us think that the cause of allergies in a person is multiple genes factors combined with environmental exposures, but a number of allergic diseases are caused by a single gene defect called monogenic allergic diseases' or 'primary atopic disorders' (PADs) of which 48 genetic causes have been identified up to this time.

Many inflammatory diseases such as atopic dermatitis, asthma, and rhinosinusitis sometime present with sever phonotypes that need new treatments by targeting cytokines and small molecules. The central role of type 2 inflammation in allergic diseases pathogenesis has been known for more than 30 years. Abnormal IL-4 and IL-13 gene expression by T lymphocytes is reflected in altered nuclear protein interactions with IL-4 and IL-13 transcriptional regulatory elements in allergic diseases.

Early approaches to inhibiting the type 2 pathway involved therapeutic administration of the type 1 cytokine IFNg in attempts to restore the type1: type 2 balance. Although some patients benefitted from this IFNg treatment, an unpublished phase 3 study did not meet study endpoints.

Biologic agents are injectable protein-based therapies such as monoclonal antibodies that target cytokine receptors or soluble cytokines. Unlike biologic agents, small molecules are usually made by chemical synthesis to produce conventional pharmacological chemicals. Small molecules can be formulated for topical or oral administration and often target intracellular pathways. Biologic and small molecule therapies may be useful in reducing side effects compared with broader traditional systemic immunosuppressive agents as they allow for more selective suppression of immune pathways.

First day : April 24th

Ayda Askari, Shiraz

Tehran: 14:50-15:00

Division of Allergy and Clinical Immunology, Department of Pediatrics, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran

Hyper-IgE Syndrome: A Case Report

Background: hyper-IgE syndrome is an inborn error of immunity characterized by eczematoid lesions, recurrent infections, and significantly elevated immunoglobulin E. Various mutations are responsible for disease pathogenesis with STAT3 and DOCK8 being the most prevalently affected genes.

Case presentation: the patient was a twelve-year-old boy being treated for thrombocytopenia who showed eczematoid lesions and extensive atopic symptoms. The patient had significantly elevated IgE of 9300 IU/mL. in whole exome sequencing, the patient showed an autosomal dominant mutation in TUBA8 gene responsible for macrothrombocytopenia disease.

Conclusion: TUBA8 mutations might be responsible for hyper-IgE syndrome or this condition might be an associative disease with hyper-IgE syndrome. This finding prompts more extensive evaluation of the patients suspected for hyper-IgE syndrome for better diagnosis or preventing potentially life-threatening bleeding tendency.

First day : April 24th

Nasrin Behniafard, Yazd

Tehran: 15:00-15:10

1.Children Growth Disorder Research Center,Shahid Sadoughi University of Medical Sciences,Yazd,Iran. 2.Department of Pediatric, Shahid sadoughi Hospital, School of Medicine, Shahid Sadoughi University of Medical Sciences,Yazd,Iran.

A Case Report of IKBKB Immune Deficiency with a Novel Mutation

Background: Nuclear Factor Kappa B (NF-κB) signaling pathway has the indubitable main role in various biological processes such as inflammation and immune responses. The primary mechanism for regulating NF-κB is through inhibiting IκB proteins by IκB kinase (IKK) complex. IKK complex consists of three groups of kinases, including IKBKB .Homozygous mutations of the IKBKB gene result in a loss of function, leading to autosomal recessive severe combined immunodeficiency (SCID) with relatively normal T and B cell counts. This study presents a two-year-old patient with a novel homozygous *IKBKB* nonsense mutation and recurrent infections.

case report: A 22-month-old Afghan infant was admitted to our hospital with a chief complaint of fever and non-bloody, large-volume diarrhea that had persisted for three weeks prior to admission. The initial clinical examination revealed microcephaly, pale conjunctiva, fine crackles in the lung bases, mild generalized edema, and hepatosplenomegaly. The BCG vaccination site appeared unremarkable. Vital signs were as follows: BP:119/67 mmHg, HR:143 bpm, T: 38.9°C, RR: 50/ min and weight 8700 grams, indicating failure to thrive .In the family history, the patient's mother reported two live births and two abortions. One of her sons died in the first year of life due to a severe infection. Laboratory data indicated the following: WBC:11,500 cells/mm³ (neutrophils 37%, lymphocytes 58%), Hb: 8.1 g/dL, PLT:317,000 cells/mm³, Alb: 2.5 g/dL, CRP:3+, and ESR: 72 mm/hr. Additionally, RT-PCR testing for cytomegalovirus from a blood sample was positive, and blood culture was positive for Salmonella enterica.COVID-19 and influenza types A and B virus RT-PCR tests were negative. The immunologic workup revealed the following immunoglobulin levels (mg/dL): IgG: 697, IgM: 10.5, IgA: 19.8, and IgE: <1. Additionally, the anti-diphtheria antibody level was 1 IU/mL, the anti-tetanus antibody level was 0.7 IU/mL, and the isohemagglutinin antibody titer was 1:16. Flow cytometry results based on percentage and absolute count were as follows: CD3: 72% (2513 cells), CD4: 41% (1438 cells), CD8: 29% (1008 cells), CD19/20: 2% (73 cells), and CD16/56: 19% (189 cells). The patient received ganciclovir and appropriate antibiotics based on the antibiogram, as well as monthly intravenous immunoglobulin (IVIG) therapy due to a suspected immunodeficiency. He was discharged in good condition. However, he experienced repeated admissions due to fever, unilateral seizures, lethargy, poor feeding, and recurrent positive blood cultures for Salmonella and other Gram-negative bacteria. Despite receiving monthly IVIG, he showed only a partial response.A brain MRI was performed due to the unilateral seizures, which raised suspicion for a brain abscess. The MRI revealed a left-sided subdural hygroma and non-communicating hydrocephalus. Consequently, a ventriculo-cisternal shunt was placed during his last admission. To further investigation, after genetic consult, whole-exome sequencing identified a novel homozygous pathogenic variant, c.1645A>G (p.Ser549Gly), in exon 17 of the IKBKB (NM_001190720.3) gene. The study showed that parents are heterozygous.Unfortunately, the patient ultimately expired due to unresponsive bacteremia to antibiotics and disseminated intravascular coagulation (DIC).

conclusion: We describe a novel homozygous pathogenic variant in the IKBKB gene, inherited in an autosomal recessive pattern, with each parent being a heterozygous carrier. Notably, the patient exhibited hydrocephalus and subdural hygroma, findings that have not been previously reported in IKBKB deficiency. These novel manifestations highlight the need for broader clinical awareness and comprehensive evaluation of patients with suspected combined immunodeficiencies.

First day : April 24th

Anahita Razaghian, Tehran

Tehran: 15:10-15:20

Tehran University of Medical Sciences, Tehran, Iran.

How Does Purine Nucleoside Phosphorylase (PNP) Deficiency Impact the Immune System? Presenting Two Cases with Two Novel Mutations

Background: Purine nucleoside phosphorylase (PNP) deficiency is a rare autosomal recessive combined immunodeficiency (CID) that presents with recurrent infections, failure to thrive, autoimmunity, and neurologic impairments. Currently, the Hematopoietic stem cell transplantation is the only curative treatment for this monogenic defect and could prevent the progression of neurologic dysfunction.
Objective: We aimed to present clinical and immunological presentations of PNP deficiency cases to facilitate early diagnosis of this fatal and disabling disease.
Method: We conducted clinical and immunological evaluations, as well as whole exome sequencing (WES), for two cases suspected of having PNP deficiency after obtaining written informed consent from their parents or legal guardians.
Result: The first case is a 19-year-old girl with a family history of four early childhood deaths due to infection. She has recurrent upper respiratory tract infections from early childhood that resolved after long-term consumption of antibiotics, one-time admission to the Intensive Care Unit (ICU) for pneumonia, and Evans syndrome began at age 9 years associated with asthma and atopic dermatitis, delayed motor evolution and progressive neurologic defects from age 7 years, and now she has an ataxic gate. The 2nd case is a 15-year-old girl with a history of recurrent infection since she was 14 months old, five admissions for pneumonia, asthma, and allergic rhinitis that was complicated by autoimmune hemolytic anemia, epidermodysplasia verruciformis, draining otitis, and lymph node abscess at age 11 years. She also exhibited delayed motor development and truncal ataxia with an ataxic gait. In the immunologic workup, both cases showed T- and B-cell lymphopenia, impaired proliferative responses to mitogens, and candidiasis. Genetic analysis via whole exome sequencing (WES) identified two novel nonsense and missense mutations in the PNP gene in the first and second cases, respectively.
Conclusion: PNP deficiency is an immunodeficiency characterized by variable clinical presentations, often accompanied by neurological features. Early recognition of this disease can be life-saving and prevent complications.

First day : April 24th

Narges Eslami, Tehran

Tehran: 15:20-15:30

Department of Allergy and Clinical Immunology, Mofid Children Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

A Case of Activated Phosphoinositide 3-Kinase Delta Syndrome (APDS) Associated with Eosinophilic Esophagitis

Background: Activated phosphoinositide 3-kinase (PI3K) delta syndrome (APDS) is an inborn error of immunity (IEI) due to hyperactive mutations in the PIK3CD gene. This mutation leads to dysregulation of the PI3K signaling pathway and aberrant T-cell and B-cell function.
Eosinophilic esophagitis (EoE) is a long-term, antigen/immune-derived inflammatory disease marked by esophageal dysfunction and eosinophilic infiltration of esophageal epithelium. Its pathogenesis involves a combination of genetic predisposition, environmental triggers, compromised integrity of the epithelial barrier, and an exaggerated immune response mediated by type 2 helper T cells (Th2) and their associated cytokines. According to findings from the United States Immunodeficiency Network (USIDNET) registry, patients with PIK3CD mutations exhibit a significantly higher incidence of EoE (12.1%) compared to the general population. This correlation highlights the critical role of PI3Kδ signaling in modulating immune responses in both the gastrointestinal tract and eosinophilic conditions, supporting the concept of an interconnected immune-gastrointestinal axis in disorders associated with PIK3CD dysfunction.
Method: Here, we present the clinical course of a 16-year-old male, born to non-consanguineous parents, diagnosed with activated phosphoinositide 3-kinase delta syndrome (APDS) due to a PIK3CD mutation. His medical history included recurrent otitis media and sinusitis, lymphoproliferative disease, and atopic conditions. Notably, his sister had died from non-Hodgkin's lymphoma. The patient received monthly intravenous immunoglobulin (IVIG) therapy, corticosteroids, and mycophenolate mofetil, with partial disease control. He subsequently developed heartburn, chronic epigastric pain, and progressive dysphagia, particularly with certain solid foods.
Result: Upper endoscopy revealed diffuse white plaques resembling Candida throughout the esophageal mucosa. Histological analysis of esophageal biopsies showed severe esophagitis, with up to 72 eosinophils per high-power field (HPF) within the epithelium. Additional findings included lamina propria fibrosis, prominent basal cell hyperplasia, eosinophilic layering along the mucosal surface, and eosinophilic micro-abscesses—features diagnostic of EoE. Management included dietary antigen elimination and pharmacologic therapy.
Conclusion: Recognizing EoE as a possible clinical feature of APDS may support earlier detection and broaden treatment strategies, particularly with targeted therapies such as PI3Kδ inhibitors and other immunomodulatory agents. Additional studies involving larger patient populations are necessary to validate this association and evaluate how the coexistence of APDS and EoE influences disease progression and treatment outcomes.

First day : April 24th

Behzad Shakerian, Isfahan

Tehran: 15:30-15:40

Department of Immunology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran.

A Case of Acquired Agammaglobulinemia Presented with Infertility

A 32 years old patient who was referred for immunological consult from infertility clinic. She had a history of thrombocytopenia since childhood, which diagnosed as Chronic ITP, but she had not responded to various treatment. 8 years ago she was diagnosed with Lymphoma and underwent treatment, after that she developed Seronegative skletal pain that continues to this day. The patient was referred from an infertility clinic because of infertility and 2 miscarriages. In her immune work up all antibody titers had decreased significantly. The patient was treated with IVIG. 2 months later all symptoms were resolved and 4 months later she became pregnant, which continues till now.

First day : April 24th

Shahrzad Fallah, Tehran

Tehran: 15:40-15:50

Department of immunology and allergy, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Syndromic Features as a Warning Sign of Inborn Errors of Immunity: Report of Three Cases of Syndromic Combined Immunodeficiency

Primary immunodeficiencies encompass a heterogeneous range of genetic defects with variety of clinical phenotypes. In the past, primary immunodeficiencies were identified as conditions that increase susceptibility to infections; however, with the accumulation of knowledge, it has become evident that these genetic defects can be the cause of severe allergies, malignancies, autoimmune and autoinflammatory conditions. In 1993, Jeffrey model foundation introduced ten warning signs of immunodeficiency, which focused more on infectious manifestations. Later, various studies showed that this list needed to be expanded.

Inborn errors of immunity have been divided into ten categories by International Union of Immunological Societies (IUIS).one of which is the Combined immunodeficiencies with associated characteristics or syndromes. 69 mutant gene identified in this category and divided into 9 subgroups. In a study conducted in the Middle East and North Africa (MENA) in 2021, this group of patients was the third group of patients with inborn errors of immunity in Iran and MENA region based on the IUIS classification.

In the ESID registry investigation, 12% of patients exhibited syndromic manifestations at the initial presentation of their illness while 10% presented exclusively with these manifestations without infectious or autoimmune symptoms.

Here we present three cases with different manifestations that fall into this category.

First case, a 16-year-old boy from consanguineous marriage presented with syndromic face and history of mastoiditis and recurrent otitis media and ventricular septal defect. He has developmental delay specially in language and speech area. In blood test, presence of lymphopenia was noted. immunological work up and Fluorescence In Situ Hybridization (Fish) study carried out. CD4 Absolut count and CD45 RO positive CD4 T cells were lower than normal. fish study showed the chromosome 22q11.2 deletion. the patient was diagnosed with DiGeorge anomaly.

Case 2, a 5- year- old boy from unrelated parents presented with syndromic face and history of hospitalization due to pneumonia and hemolytic jaundice. splenomegaly detected in physical examination. immunological work up performed and showed low IgG level, reverse CD4 to CD8 ratio, low natural killer cells And low response to mitogen in lymphocyte transformation test. Whole exome sequencing showed a heterozygote mutation in KMT2 gene which is the cause of kabuki syndrome.

Case 3, an 8 -year-old boy from related parents with history of hospital admission because of diarrhea, bacterial pneumonia and renal failure referred to immunology clinic. He was hypothyroid. Short stature, hypertension, and dysmorphic face were notable on physical examination.

Lymphopenia, hypogammaglobulinemia and increased IgE level were evident in the blood sample.CD flowcytometry revealed reverse CD4/CD8 ratio and low CD56 Absolut count. whole exome sequencing showed mutation in SMARCAL1 gene which is the cause of Schimke immuno-osseous dysplasia.

In this article, we highlight the associated symptoms that are presented in this specific group of immunocompromised patients and physicians should be aware of these symptoms during management of patients.

First day : April 24th

Golnaz Eslamian, Tehran

Tehran: 15:50-16:00

Shahid Beheshti University of Medical sciences, Tehran, Iran.

Immune Infertility and Infertility Related to Immune Deficiency

There is a growing interest in the role of immunology on reproductive outcomes. It is well-known that the immune system plays a role in all stages of reproduction, ranging from implantation to maintenance of a pregnancy. Unexplained infertility is when fertility testing hasn't found a cause to explain a person or couples infertility. Recurrent implantation failure (RIF) is a clinical phenomenon characterized by a lack of implantation after the transfer of several embryos and disturbs approximately 10% of couples undergoing in vitro fertilization and embryo transfer. Immune dysregulation can cause unexplained subfertility in 20%–30% of subfertile couples. The presence of the decidual immune system (innate or adaptive) is essential for a successful pregnancy and fertility that is mediated by T helper (Th) 1, Th2, Th17, T follicular helper, CD8+ CD28− T, and regulatory T cells, as well as autoantibodies such as antiphospholipid antibody, antithyroid antibody, antiovarian antibody, cytokines, and chemokines. In some well-known immunodeficiency diseases, subfertility is considered as a part of symptoms such as APECED (APS-1), IKROS GOF,.....

An immune evaluation can be effective and reliable for women with unexplained subfertility and RIF. Natural killer (NK) cells are one of the innate immune cells that participate in maternal-fetal tolerance while protecting pregnancy from infection. In women undergoing IVF/embryo transfer (ET) cycle, the CD56+ and CD56+/16+ peripheral blood NK cell percentages on the day of ET were significantly higher in women who failed the cycle than in women with successful implantation. T helper cells play a role in reproductive immune regulation and tolerance. A predominance of Th2 immunity in the peripheral blood and decidua is observed under the normal progression of pregnancy, particularly after successful implantation to before the parturition. The proportion of peripheral blood TNF-□□ Th cells and Th1/Th2 cell ratios, including TNF-□□/IL-4□ and TNF-□□/IL-10□ Th cell ratios, were significantly higher in women with RIF than in fertile controls. T helper 17 cells are involved in inflammatory processes, infectious immunity against extracellular organisms, and autoimmunity. Regulatory T (Treg) cells represent another distinct subpopulation of T cells essential for maintaining self-tolerance and controlling the immune response. Women with RPL had elevated levels of IL-17+ T cells and Th17 cells with IL-6, IL-17, and IL-23 expression. women with Antiphospholipid Antibodies had significantly reduced levels of T-cells, which may be associated with insufficient decidualization of the endometrium to allow controlled embryo invasion. This can manifest as IVF failure. It is well-established that adequate thyroid hormone production is necessary for normal menstrual function and maintenance of pregnancy due to its role in implantation and early fetal development, so thyroid autoimmunity can lead to infertility. Antinuclear Antibodies may decrease reproductive success and some possible mechanisms are found.

Second day: April 25th

Ahmet Ozen, Turkey

Tehran: 8:30-8:45

Department of Pediatric Allergy and Immunology, Faculty of Medicine, Marmara University, Istanbul, Turkey; The Istanbul Jeffrey Modell Diagnostic Center for Primary Immunodeficiency Diseases, Istanbul, Turkey; The Isil Berat Barlan Center for Translational Medicine, Istanbul, Turkey.

Ahmet Özen, MD, is the chief of the division of allergy and immunology in pediatrics at Marmara University and the director of the Istanbul Jeffrey Modell Center for Primary Immune Deficiencies. He discovered a definitive cure for CHAPLE Syndrome, a deadly disease of childhood for the first time in the world in 2017. “Nature Immunology”, one of the most prestigious journals of the medical world, gave wide coverage to this success of the Turkish doctor in its January 2021 issue. Researchers of Marmara University lead the world in the development of diagnosis and treatment methods for this disease called “CHAPLE SYNDROME” and some clinical trials can only be carried out in this center in the world. The success of Ahmet Oğuzhan Özen revealed that genomic medicine plays an important role in the treatment of diseases.

Second day: April 25th

Ismail Reisli, Turkey

Tehran: 8:45-9:00

Department of Pediatric Immunology and Allergy, Medicine Faculty, Necmettin Erbakan University, Konya, Türkiye

Ismail Reisli, MD, is a distinguished physician specializing in pediatric immunology and allergy at Necmettin Erbakan University in Konya, Turkey. In 2021, he was appointed Accreditation Coordinator for Meram Faculty of Medicine, and in 2023, he became Vice Dean of the Faculty of Medicine. Dr. Reisli has contributed significantly to research in his field, with numerous publications focusing on pediatric immunology and allergic diseases.

Second day: April 25th

Sevan Iritsyan, Armenia

Tehran: 9:00-9:15

Department of Hematology and Transfusion Medicine, National Institute of Health, Yerevan, Armenia.

Sevan Iritsyan, MD, is a distinguished allergologist and clinical immunologist based in Yerevan, Armenia. He earned his medical degree from Yerevan State Medical University (YSMU) after Mkhitar Heratsi, completing his studies at the Faculty of Military Medicine in 2009. Following this, he pursued an internship at YSMU from 2009 to 2010 and completed his clinical residency in allergology and clinical immunology between 2014 and 2016. In 2017, Dr. Iritsyan further honed his expertise through training in immunology laboratory skills at the University Hospital Homburg in Germany.

Dr. Iritsyan has held several notable positions throughout his career. He served as a military doctor in the Armed Forces of Armenia from 2010 to 2013 and was the executive manager at MIBS Medical Diagnostic Center between 2013 and 2016. His dedication to the field led him to roles such as doctor allergist-immunologist at the Medical Genetics Center (2016-2018) and head of the laboratory service at Arabkir Medical Center from 2018 to 2023. In 2023, he took on the role of head of laboratory services at Yerevan Medical Center and began practicing as an allergist/immunologist at Wigmore Clinic.

In addition to his clinical roles, Dr. Iritsyan is committed to academia. Since 2022, he has been a lecturer at the Department of Physiology of Yerevan State University's Faculty of Biology, and since 2020, at the Department of Hematology and Transfusion of the National Institute of Health. His expertise is also recognized by the Ministry of Health of Armenia, where he has been serving as a consultant on immunology since 2019.

Second day: April 25th

Elena Kovzel, Kazakhstan

Tehran: 9:15-9:30

Program of Clinical Immunology, Allergology and Pulmonology, University Medical Center, Nazarbaev University, Nur-Sultan, Kazakhstan.

Kovzel Elena, MD, graduated from the Semipalatinsk Medical Institute in 1990. From 1990 to 1992, she studied in clinical residency at the Department of Infectious Diseases with a course in clinical immunology and allergology at the Semipalatinsk Medical Institute. From 1992 to 1995 she studied in full-time postgraduate study at the Department of Infectious Diseases with a course of clinical immunologists and allergology at the Semipalatinsk Medical Institute. In 1995, she defended her thesis at the Kazakh State Medical University at the Scientific Council on Infectious Diseases. In 2002, she defended her doctoral dissertation (M.D.) at the Russian State Medical University on codes: public health (epidemiology of noncommunicable diseases), allergology and immunology. Under the leadership of Kovzel E.F. 2 PhD and 2 master's theses are defended. Kovzel E.F. - Professor of the Medical Academy of Astana, head of the Department of Clinical Immunology, Allergology, Pulmonology of the Republican Diagnostic Center of the Corporate Fund “University Medical Center” of Nazarbayev University. Chairman of the Kazakh Society of Immunodeficiencies and the Association of Immunologists. In 2015 and 2017, she was awarded medals for her contribution to the healthcare of the Republic of Kazakhstan. In 2017, a medal for many years of work and contribution to the development of healthcare in the Republic of Kazakhstan, letters of thanks from the Presidents of the Republic of Kazakhstan, the Ministry of Health, the Ministry of Education and Science, etc. Under the leadership of Kovzel E.F. the direction of clinical immunology in the Republic is developing.

Second day: April 25th

Natallia Klimkovich, Belarus

Tehran: 9:30-9:35

Belarusian State Medical University, Minsk, Belarus
Head of the Department of Paediatric Oncology, Haematology and Immunology

Second day: April 25th

Shohreh Ghasemi, USA

Tehran: 9:35-9:40

Oklahoma University.
Advisory board member

Second day: April 25th

Sergei Rakovich, Belarus

Tehran: 9:40-9:45

Belarusian State Medical University, Minsk, Belarus
Head of the HIV department

Second day: April 25th

Mahsa Rekabi, Tehran

Tehran: 10:15-10:30

Department of Immunology and allergy, Masih daneshvari Hospital, Shahid beheshti university of medical sciences, Tehran, Iran.

Update in Common Variable Immune Deficiency

Common variable immunodeficiency (CVID) is an inborn error of immunity (also called primary immunodeficiency) characterized by impaired B cell differentiation with defective immunoglobulin production. It is the most prevalent form of significant antibody deficiency affecting both children and adults. "Variable" refers to the heterogeneous clinical manifestations of this disorder, which include recurrent infections, chronic lung disease, autoimmune disorders, gastrointestinal disease, and a heightened susceptibility to lymphoma.The most common sign of CVID is frequent infections — most commonly, sinusitis, pneumonia, bronchitis, ear infections and shingles. Other symptoms of CVID can include: Chronic rhinitis (runny nose or nasal congestion). Enlarged lymph nodes. Onset of immunodeficiency at greater than 2years of age. Absent isohemagglutinins and/or poor response to vaccines. Defined causes of hypogammaglobulinemia have been excluded. The incidence of CVID is estimated at 1:20,000 and 1:50,000 in Caucasians, but there are regional differences, with CVID being less commonly diagnosed in Asians and Afro-Americans. The onset of symptoms may be at any age, but is generally betweenthe ages of 15-40.

CVID children, comparably to adults, pneumonia was themost prevalent infection, assessed in as much as 73% of pediatric patients, and it was followed by upper respiratory tract infections, such as otitis media, pharyngitis, and tonsillitis as occurring in 65%, and gastrointestinal infections in 44% of them. Infections caused by Streptococcus pneumoniae, Haemophilus infuenza, Staphylococcus aureus, and Pseudomonas aeruginosa were associated with the severe course of the disease. Autoimmune diseases are the second manifestation of systemic or organ-specific immunopathology in CVID after infections, occurring in 10–30% of afected patients. In early-onset CVID, diagnosed before the age of 10 years, the young age negatively correlates with the risk of autoimmune complications Monogenic CVID characterized by impaired self-tolerance and an autoimmune phenotype include ICOS ,CTLA-4, NF-kappa B1, and NF-kappa B2 defciencies, associated with a strikingly high prevalence of a wide spectrum of autoimmune disorders ranging from 31 to 76% of pediatric CVID cases compared to 10.2% of CVID patients in the USIDNET Registry

Contraindication: live attenuated vaccines, such as oral poliomyelitis vaccine (OPV), live attenuated infuenza vaccine (LAIV), yellow fever, smallpox and live bacterial vaccines, e.g., Salmonella typhi (Ty21a), .They confer a risk of adverse efects following vaccination (AEFI). Administration of an inactivated infuenza vaccine as well as pneumococcal and meningococcal vaccines is strongly recommended due to low antigen specifc antibodies in immunoglobulin preparations and a high risk of morbidity in pediatric CVID patients. Treatment CVID: Treatment is treated with intravenous immunoglobulin infusions or subcutaneous (under the skin) immunoglobulin injection to partially restore immunoglobulin levels. The immunoglobulin given by either method provides antibodies from the blood of healthy donors.

Second day: April 25th

Zahra Shahraki Ghadimi, Zahedan

Tehran: 10:30-10:45

Clinical Immunology Research Center, Zahedan University of Medical Sciences, Zahedan, Iran

Agammaglobulinemia and Autoimmune Disease

Agammaglobulinemia, a primary B-cell deficiency (e.g., X-linked agammaglobulinemia/XLA), is characterized by absent B-cells, hypogammaglobulinemia, and recurrent infections. Paradoxically, ~30% of patients develop autoimmune/inflammatory diseases, including seronegative arthritis, cytopenias (ITP, AIHA), and enteropathy. 3 mechanisms have been identified in this:

- T-cell dysregulation: Impaired B-cell tolerance leads to autoreactive T-cells (Th17/Tc17 skewing, IL-17-driven inflammation).

- Innate immune hyperactivation: BTK deficiency disrupts TLR/NF-κB signaling, increasing IL-1β, TNF-α, and neutrophil NETosis.

- Gut dysbiosis: Lack of IgA promotes bacterial translocation and Th1/Th17 responses.

Conclusion: Autoimmunity in agammaglobulinemia stems from B-cell-independent pathways, necessitating tailored immunomodulation. Future research focuses on biomarkers (IL-17, TCR clonality) and targeted therapies (TLR/IL-23 inhibition).

Second day: April 25th

Marzieh Asgharyan, Tehran

Tehran: 10:45-10:55

Iran University of Medical Sciences, Tehran, Iran.

Does Vaccination Increase the Risk of Autoimmune Diseases?

One of the common concerns about vaccination is whether it can trigger or worsen autoimmune diseases. Autoimmune diseases occur when the immune system mistakenly attacks the body's own cells. Since vaccines stimulate an immune response, some worry that they might contribute to autoimmunity. This article explores the scientific evidence behind this concern

Second day: April 25th

Akefeh Ahmadiafshar, Zanjan

Tehran: 10:55-11:05

Zanjan University of Medical Sciences, Zanjan, Iran

X-Linked Agammaglobulinemia in a Patient with a Positive Family History and Different Presentations

X linked agammaglobulinemia (XLA) is a primary immunodeficiency because of that caused by impaired B cell maturation and production. XLA is due to defects in a signal transduction molecule called Bruton tyrosine kinase (Btk). XLA is caused by mutations in the Bruton tyrosine kinase (BTK) gene, that is located on the long arm of x chromosome and Btk is expressed in all stages of B cell lineage development, as well as in myeloid and erythroid cells. Thus these patients had significantly reduced levels of B lymphocytes in their blood and tissues and have severely decreased production of all classes of immunoglobulins with markedly defective antibody responses. The patients usually suffered from recurrent and sever sino pulmonary infection because of encapsulated bacteria after 6 months of age and enterovirus infection might be induced sever brain or heart damage and even myositis with sever disability.

Our patient is a 7 years'old boy how diagnosed with recurrent otitis at one year of age. He had positive family history of agammaglobulinemia in his cousin that diagnosed sooner. The uncle of his mother were also referred about 20 years ago because of chronic arthritis at 8 years of age that diagnosed with absent B cells (CD19<0.01) and agammaglobulinea. his problem resolved after IVIG administration for 4-6 weeks and appeared when serum IgG level reduced. Arthritis is a rare presentation of agammaglobulinemia and should be considered in patients with idiopathic chronic arthritis. Attention to inheritance and genetic consulting in immunodeficiency disorders is useful for prevention and early detection of these defects.

Second day: April 25th

Alireza Shafiei, Tehran

Tehran: 11:05-11:15

Allergy and Clinical Immunology division, Pediatric Department, Bahrami Hospital, Tehran University of Medical Sciences, Tehran, Iran.

Bone Marrow Transplantation in Primary Immunodeficiency: Report of Two Fatal Cases

Background: Primary immunodeficiency disorders (PIDs) are rare, often life-threatening conditions that may require hematopoietic stem cell transplantation (HSCT) as a curative option. However, HSCT carries substantial risks, and outcomes can be influenced by timing, pre-transplant status, and local healthcare resources. We present two pediatric cases of PID who underwent HSCT but unfortunately died from post-transplant complications .

Case presentation: Case 1: A 5-year-old boy was admitted with a history of recent fever and pallor. There was no history of recurrent or severe infections. Clinical examination revealed growth retardation, and significant splenomegaly. Initial labs showed pancytopenia. Bone marrow aspiration was performed and no evidence of malignancy or hemophagocytosis was found. Immunologic work-up initially suggesting Hyper-IgM syndrome. Further flow cytometry of peripheral blood showed reduced CD3, CD4, CD8, and CD19, with normal NK cell markers (CD16/CD56), consistent with a probable combined immunodeficiency. Whole-exome sequencing identified a homozygous mutation in the NHEJ1 gene. IVIG therapy was initiated, and the patient was referred for HSCT. While awaiting a matched donor, he remained clinically stable without severe infections. Unfortunately, he died one month post-transplant due to severe infection.
Case 2: A 7-month-old boy was initially referred to an immunology clinic with a perianal abscess. Early immune evaluation including CBC, immunoglobulins, and Nitro blue Tetrazolium (NBT) test were normal. One month later, he was hospitalized with fever, impetigo-like skin lesions, and tenderness of the proximal tibia, which led to a diagnosis of possible osteomyelitis. Repeat immunologic testing revealed an NBT test of 0%, suggestive chronic granulomatous disease (CGD). Following clinical improvement, he was referred for HSCT. The patient died 20 days post-transplant due to infectious complications.

Conclusion: These two cases underscore the complexities and risks of bone marrow transplantation in children with PID. While HSCT offers a potential cure, outcomes heavily depend on early diagnosis, careful patient selection, optimal pre-transplant condition, and the availability of supportive care. In resource-limited settings, a tailored approach and risk-benefit assessment are essential before proceeding with transplantation.

Second day: April 25th

Sare Sadat Ebrahimi, Kerman

Tehran: 11:15-11:25

Department of Immunology and Allergy, Kerman University of Medical Sciences, Kerman, Iran.

DGAT1 is a Rare Fatal Protein-Losing Enteropathy

DGAT1 (Diacylglycerol O-acyltransferase 1) deficiency is a rare autosomal recessive disorder caused by mutations in the DGAT1 gene, which is essential for triglyceride synthesis. This condition primarily affects infants and young children, presenting with severe malabsorption, failure to thrive (FTT), and chronic diarrhea. Among the cases reviewed, a 14-month-old male displayed symptoms from 3 to 4 days of age, including FTT and significant temporal wasting. His condition was complicated by recurrent hypoproteinemia, anemia, and edema, requiring interventions such as surgical correction for malrotation and treatment as cystic fibrosis (CF) suspected, which was ineffective. Despite the administration of intravenous immunoglobulin (IVIG), he ultimately succumbed to septic shock before genetic testing provided a diagnosis. The second case involved a 12-month-old male from a consanguineous marriage, who also presented with chronic diarrhea and FTT. Positive blood cultures prompted immunological assessment, revealing borderline IgG levels and normal sweat testing. Genetic testing confirmed DGAT1 deficiency, highlighting the importance of early genetic diagnosis. The third case presented a 3-month-old female with severe diarrhea and FTT, raising suspicions for CF, which were further substantiated by endoscopic findings of eosinophilic infiltration. Unfortunately, she passed away prior to confirming genetic results, though both parents were later identified as heterozygous carriers of the mutation. The diagnostic complexities of DGAT1 deficiency can often mimic other gastrointestinal conditions like CF; therefore, early genetic testing is crucial for successful diagnosis and treatment, which could significantly improve outcomes. In conclusion, DGAT1 deficiency should be considered for pediatric patients exhibiting findings of chronic diarrhea and FTT, particularly in the context of consanguinity in family history. This condition underscores the necessity for increased awareness and prompt immunological evaluation in suspected cases, utilizing genetic testing to guide targeted therapeutic strategies

Second day: April 25th

Ahmad Vosughi Motlagh, North Khorasan

Tehran: 11:25-11:35

North Khorasan University of Medical Sciences, Bojnurd, Iran

Pregnancy Outcome and Renal Complications in a Female Patient with Common Variable Immunodeficiency (CVID)

Introduction: CVID is the most common symptomatic primary immunodeficiency, typically presenting in childhood or early adulthood. It is associated with recurrent infections, autoimmune diseases, and gastrointestinal disorders. However, data on pregnancy outcomes and renal complications in CVID are limited. This case highlights a rare combination of adverse pregnancy outcome and renal failure in a young woman with CVID.

Case Presentation: A 22-year-old woman diagnosed with CVID at age 5, based on recurrent otitis media, sinusitis, and pneumonia, had been receiving regular intravenous immunoglobulin (IVIG) therapy. She was born to consanguineous parents, with no known family history of immunodeficiency. Her medical history included severe anemia requiring a single transfusion and mild splenomegaly in adolescence. At age 21, she became pregnant. Prenatal ultrasound showed fetal growth restriction and microcephaly. At 36 weeks, due to premature rupture of membranes and meconium-stained fluid, she underwent an emergency cesarean section. The newborn weighed 1.5 kg with a head circumference of 29 cm, consistent with IUGR and microcephaly. Postpartum, the patient experienced progressive renal dysfunction. Initial labs revealed elevated serum urea (74 mg/dL) and creatinine (2.36 mg/dL), with no history of nephrotoxic exposure or surgical complications. Renal function deteriorated over the following months, and she began dialysis four months postpartum.

Discussion: This case underscores the potential for serious complications in pregnant women with CVID. While many can have successful pregnancies with adequate IVIG replacement, immune dysregulation and subclinical infections may contribute to poor fetal outcomes such as IUGR and microcephaly. The onset of renal failure postpartum may reflect an unrecognized underlying renal pathology or a pregnancy-related insult. Though rare, renal complications in CVID—such as glomerulonephritis and amyloidosis—have been documented. Chronic immune activation and systemic inflammation likely play contributory roles. Her anemia and splenomegaly may represent autoimmune processes or hypersplenism, both known complications of CVID. This case highlights the need for close renal monitoring in CVID patients, particularly during pregnancy and the postpartum period.

Conclusion: This case illustrates a rare and severe manifestation of CVID, involving adverse pregnancy outcome and progression to end-stage renal disease. It highlights the importance of multidisciplinary care, thorough prenatal monitoring, and postnatal surveillance of renal function in women with CVID

Second day: April 25th

Hosseinali Khazaei, Zahedan

Tehran: 11:35-11:45

Clinical Immunology Research Center, Department of Immunology and Hematology, Zahedan University of Medical Sciences, Zahedan, Iran.

Correlation Between Serum Amounts of Total IgE, C3, and C4 Levels in Patients Suffering from IgA Deficiency, With and Without Allergic Rhinitis Symptoms

Introduction: Preterm birth children with food maternal allergy history have relation with increased food allergic reaction compared with term children. The aim of this study was to investigate the relation between preterm birth children with their maternal allergy history by skin prick test method with some food allergens.

Methods of study: The method of study was descriptive-analytic cross sectional. The data of preterm birth children with their maternal allergy history, including a history of food allergic in their maternal allergy, were obtained by 75 self-administered questionnaires such as age, place of residence, history of family allergy, type of food allergen referred to the Immunology and Allergy Clinic of Ali Ibn Abi Talib (AS) Hospital in the years between1398 to1401. Finally, the studied data were entered into SPSS software and afterward analyzed.

Results: The mean and standard deviation of the age in the studied subjects were 5.4 and 9.2 years. 52 (69.3%) patients were girls and 23 (30.7%) were boy. 33 of patients (44%) of people with preterm birth had a history of maternal food allergies. The most distribution of the frequency of food allergy by skin prick test, was in the form of milk, egg (whole), paper, nuts, wheat, banana, peanuts and onion respectively.

Conclusions: Exposure to the food allergy (especially milk and egg), might had associated with maternal food allergy. Further study needs to be done in term of measuring total IgE

Second day: April 25th

Mahdieh Karimizadeh

Tehran: 13:00-13:05

Mofid Children Hospital, Shahid Beheshti Medical University, Tehran, Iran

Management and Outcomes of SCID Patients at Mofid Children Hospital (Shahid Beheshti Medical University): A Retrospective Analysis (2022-2025)

Background: Severe Combined Immunodeficiency (SCID) is a group of inborn errors of immunity characterized by profound T-cell dysfunction, often fatal if untreated. Early diagnosis and timely hematopoietic stem cell transplantation (HSCT) are critical for survival. This study aims to evaluate the clinical presentation, immunologic findings, genetic profile, outcomes, and the need for neonatal screening in SCID patients admitted to Mofid Hospital since 2022.
Methods: A retrospective review of 13 SCID patients diagnosed based on ECID 2019 criteria between 2022 and 2025. Clinical features, genetic mutations, treatment outcomes, and timing of HSCT were analyzed.
Results: Thirteen patients diagnosed with SCID based on ECID 2019 criteria were included, with a mean age at diagnosis of 4 months. Common clinical features included severe and recurrent infections—such as sepsis, CMV retinitis, fungal infections, chronic diarrhea—as well as BCGosis/BCGitis failure to thrive. Genetic mutations were identified in 11 out of 13 cases, with the most frequent being JAK3 (3 cases) and NHEJ1 (2 cases), followed by DCLRE1C, RAG1, IL7R, ADA, Cernunnos, and gamma c mutations. Two patients had a SCID phenotype with undetermined mutations. All patients had suitable donors and were referred for bone marrow transplantation; however, only 3 patients (23%) underwent successful HSCT and are currently alive—two performed at our center (IL7R and gamma c) and one in a European center (RAG1). Six patients (46%) died before transplantation due to severe infections and complications during the waiting period, despite donor availability. One patient died during transplantation due to severe pulmonary and cardiac complications. Overall, this highlights the critical impact of delayed diagnosis and infection control on SCID outcomes in our setting.
Outcomes: All patients had suitable donors and were referred for bone marrow transplantation; however, only 3 patients (23%) underwent successful HSCT and are currently alive—two performed at our center (IL7R and gamma c) and one in a European center (RAG1). Six patients (46%) died before transplantation due to severe infections and complications during the waiting period, despite donor availability. One patient died during transplantation due to severe pulmonary and cardiac complications. Overall, this highlights the critical impact of delayed diagnosis and infection control on SCID outcomes in our setting.
Conclusion: Our data highlight poor outcomes for SCID patients in the absence of early intervention in our country. Despite the availability of suitable donors, the mortality rate among SCID patients owing to delays in BMT and complications underscores a critical need for enhanced screening and expedited treatment protocols. This study advocates the implementation of early neonatal screening using TREC assays to facilitate timely referral and management of SCID cases, significantly improving patient outcomes and reducing mortality rates associated with this severe condition.

Second day: April 25th

Sahar Seraj

Tehran: 13:05-13:10

Mofid Children Hospital, Shahid Beheshti Medical University, Tehran, Iran

Inborn Errors of Immunity with Atopic Phenotypes

Inborn errors of immunity (IEI) with atopic phenotypes are a subgroup of IEI may present with severe and multiple atopic clinical manifestations. IEI include more than 500 monogenic disorders marked by different immune dysregulation mechanisms. The recognition and accurate diagnosis of IEIwA are crucial for timely and appropriate therapeutic intervention. The diagnosis should be suspected according to the presence of red flag at clinical evaluation stage ،such as early onset ،severe atopy recurrent infections, etc. Early diagnosis of immunodeficiency can help the patients recover more quickly and completely.

Second day: April 25th

Saman Tavakoli

Tehran: 13:10-13:15

Shahid beheshti University

Dock8 Deficiency Presented with a Nasopharyngeal Mass

Autosomal recessive hyper IgE syndrome (AR-HIES), resulting from biallelic mutations in the DOCK8 gene, is a rare primary immunodeficiency characterized by extreme elevations in serum IgE, recurrent cutaneous and respiratory infections, severe allergic inflammation, and susceptibility to viral pathogens such as herpesviruses and human papillomaviruses. Patients often exhibit profound T-cell defects, hypereosinophilia, and mucocutaneous involvement. While immune dysregulation is well-documented in DOCK8 deficiency, the development of IgG4-related disease (IgG4-RD), a fibroinflammatory condition marked by IgG4-positive plasma cell infiltration, has not been previously described in this context.

Case Presentation: an 8-year-old girl born to consanguineous parents who presented at 7 months of age with recurrent vesicular lesions on the neck, initially diagnosed as herpes simplex virus infection. Over the subsequent years, she developed progressive mucocutaneousdisease, including extensive vesicular lesions of the oral cavity and hard palate, gingival hyperplasia, multiple warts, molluscumcontagiosum, and persistent sinusitis. At age 4, she was genetically confirmed to have DOCK8 deficiency. At age 6, she developed a mass in the hard palate initially diagnosed as actinomycosis, which responded partially to prolonged penicillin therapy. A subsequent biopsy revealed herpes simplex virus and human herpesvirus 6 (HHV-6) co-infection; the lesion improved with acyclovir and valganciclovir but recurred upon discontinuation. She later developed a large necrotic nasopharyngeal mass with enlargement of the submandibular and sublingual glands, accompanied by severe oral and otologicsymptoms. Imaging and endoscopy confirmed mass extension, and due to airway compromise, she underwent tracheostomy. Histopathology demonstrated dense plasma cell infiltrates positive for CD138, IgG (80%), and IgG4 (>40%), consistent with IgG4-related disease. She was treated with high-dose corticosteroids and four cycles of rituximab, which led to partial regression of the mass and symptomatic improvement. Despite long-term management with intravenous immunoglobulin (IVIG), antivirals, and immunosuppressants, her condition remained refractory. She subsequently underwent hematopoietic stem cell transplantation (HSCT) in the United States with her mother as a haploidentical donor. Unfortunately, she succumbed to post-transplant complications several months later.

Conclusion: This case represents the first documented association between DOCK8 deficiency and IgG4-related disease. It expands the clinical phenotype of AR-HIES and underscores the potential for previously unrecognized inflammatory and autoimmune manifestations in this immunodeficiency. Clinicians should maintain a high index of suspicion for atypical fibroinflammatory conditions in patients with DOCK8 mutations, particularly in the presence of refractory mucosal lesions. Furthermore, this case highlights both the therapeutic challenges and the potential complications associated with HSCT in patients with significant disease burden and rare immunological comorbidities

Second day: April 25th

Shabnam Salehi

Tehran: 13:15-13:20

Shahid Beheshti University of Medical Sciences Tehran-Iran

Familial Common Variable Immunodeficiency (CVID) with Multisystem Involvement: A Case Series

Common variable immunodeficiency (CVID) is a heterogeneous group of primary immunodeficiencies, defined by hypogammaglobulinemia and impaired humoral immunity. We report an unusual family case series, three brothers, aged 32, 27, and 23 respectively, diagnosed with CVID and distinct multisystem manifestations. Their diagnostic considerations, particular immunologic profiles, and therapeutic strategies have been discussed with a focus on genetic susceptibility. The oldest brother presented with classical CVID manifested as severe hypogammaglobulinemia, recurrent sinopulmonary infections, bronchiectasis, and autoimmune hemolytic anemia. The youngest brother presented at his younger age with mucocutaneous lesions, alopecia, cervical lymphadenopathy, obstructive sleep apnea, and a seizure history. Despite moderate immunoglobulin deficiency, his phenotype was consistent with combined immunodeficiency. The second brother manifested gastrointestinal symptoms, recurrent skin infections, and fatty liver. This case had relatively normal immunoglobulin levels but subtle evidence of immune dysfunction leading to a likely more benign CVID phenotype. Although the phenotypes differ substantially, the eldest and youngest brothers clinically benefited from immunoglobulin replacement therapy while the second brother only received symptomatic supportive treatment. Whole exome sequencing of the oldest brother identified two heterozygous nonsense variants, IRAK3 (c.799C>T; p.R267*) and HSD11B1 (c.520A>T; p.K174*), both classified as variants of uncertain significance. In the two younger siblings, both variants were confirmed by Sanger sequencing as present in heterozygous form. In the eldest sibling, additional heterozygous variants in C8B and ACAT1 associated with autosomal recessive conditions were found. This case series highlights the importance of early identification of familial CVID, especially when atypical or extra-pulmonary manifestations are present. Proper immunologic work-up and genetic testing will help to secure an accurate diagnosis and develop a management plan tailored to each patient. For patients with even mild or atypical CVID, early initiation of IVIG therapy can prevent the complications associated with infectious processes. Our findings support the inclusion of close relatives in immunologic screening protocols when CVID is diagnosed in a family member.

Second day: April 25th

Samaneh Abdollahzadeh

Tehran: 13:20-13:25

Children's Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Clinical and Genetic Diversity in Pediatric APDS: A Case Series of Nine Patients

Background: Activated PI3Kδ Syndrome (APDS) is a rare primary immunodeficiency caused by gain-of-function mutations in PI3Kδ, leading to dysregulation of the PI3K-AKT-mTOR pathway. The clinical presentation often includes recurrent sinopulmonary infections, acute and chronic viral infections, lymphoproliferation, and a range of immune-mediated complications.
Objective: To describe the clinical characteristics, immunologic profiles, genetic findings, and treatment outcomes in a cohort of nine pediatric patients diagnosed with APDS at a single center.
Methods: This retrospective analysis included nine patients (6 female, 3 male), with a median symptom onset at 18 months and median age at diagnosis around 4 years. Genetic confirmation was obtained through sequencing of PIK3CD (n=7) or PIK3R1 (n=2).
Findings: All patients presented with recurrent sinopulmonary infections, generalized lymphadenopathy, and splenomegaly. Over half showed evidence of immune dysregulation, including cytopenias, autoimmune hepatitis, arthritis, and enteropathy. Notably, patients with PIK3R1 variants exhibited additional syndromic features such as craniofacial dysmorphism. One patient developed lymphoma. Growth failure and developmental delay were observed in a subset. Immunophenotyping revealed variable CD4+ T-cell depletion and abnormal CD4/CD8 ratios, hypogammaglobulinemia with increased serum IgM. Several patients had impaired vaccine responses.
Management: All received regular IVIG infusions and cotrimoxazole prophylaxis. Sirolimus was administered in six cases, with clinical improvement in lymphoproliferative and autoimmune manifestations. Additional therapies included corticosteroids and rituximab, used in selected patients with more severe disease.
Conclusion: This series highlights the clinical and genetic heterogeneity of APDS in children. While there are shared core features, individual trajectories vary widely—even among those with the same mutation. Early recognition and gene-based diagnosis are essential to guide appropriate immunomodulatory therapy and improve long-term outcomes.

Second day: April 25th

Elham Moradian

Tehran: 13:25-13:30

Shahid beheheshti, Tehran, Iran

Case Presentation of Leaky SCID

The patient is a 2.5-year-old boy from distantly related parents, the first child in the family. He was born at 36 weeks and was hospitalized in the NICU for one week after birth. His umbilical cord fell off at one week old. He had a history of recurrent oral thrush since birth. After being discharged from the NICU, he had recurrent fevers with diarrhea and vomiting. He was hospitalized at the age of 5 months due to pneumonia, and he had pneumonia 5 more times by the age of 9 months. According to the patient's symptoms, he underwent genetic testing and was diagnosed with a homozygous mutation of the JAK3 gene and was treated with prophylactic antibiotics with a diagnosis of Leaky SCID disease.

Last winter, he had swelling of the right thigh and inability to bear weight on the right leg. During the tests, he had a bone abscess that was drained and was positive in tuberculosis pathology and was treated with anti-tuberculosis. A month later, he also had swelling of the right elbow and subsequently underwent surgery 3 times to drain the bone lesion. The pathology of the bone lesion in the upper limb also confirmed tuberculosis. The patient was examined 4 months ago following pus discharge from the urethra and a fungus ball was diagnosed in the kidney. The patient is currently undergoing antifungal and anti-tuberculosis treatment as well as antibiotics and is a candidate for bone marrow transplantation.

Second day: April 25th

Niloufar Yazdanpanah

Tehran: 13:30-13:35

1. Research Center for Immunodeficiencies, Children's Medical Center, Tehran University of Medical Sciences, Tehran, Iran
2. Network of Immunity in Infections, Malignancy and Autoimmunity (NIIMA), Universal Scientific Education and Research Network (USERN), Tehran, Iran

CYBB Mutation in a Patient with CGD McLeod Phenotype

A 10 months old boy born to a non-consanguineous family, who was referred to our clinic because of multiple hospitalization due to skin lesions and infections. At the age of 3 months, he has experiences the first hospital admission because of axillary abscess in his left armpit, which was probably BCGosis. Later at the age of 4 months and 10 days, he was suffering from recurrent perianal abscess that was repeated 4 times. At the age of 7 months, he was hospitalized for 6 days because of prolonged fever (simultaneously, he had elevated ESR level and lymphocytosis). Two weeks later at the age of 7.5 months, he was hospitalized for 12 days because of fever and inguinal lymphadenopathy; in this admission, a NBT test was performed which was defective, suggesting the diagnosis of chronic granulomatosis disease (CGD) for the patient. At the age of 10 months, he was hospitalized for 2 weeks because of inguinal lymphadenitis and inguinal abscess. The patient has undergone different regimens of antibiotics and antifungals but no improvement was observed. In physical examination, he had syndactyly of feet and cutaneous syndactyly of hand. Whole exome sequencing was requested and a large deletion in *CYBB* gene was noted. He was admitted to the hospital for hematopoietic stem cell transplantation (HSCT) at the age of 18 months old. About one year after the HSCT, the NBT test resulted negative. As the retinal infections and the most suspected congenital ophthalmic diseases probably ruled out, the patient condition could be rationalized by considering CGD with McLeod phenotype.

Second day: April 25th

Kiarash Saleki

Tehran: 13:35-13:40

Research Center for Immunodeficiences (RCID), Tehran University of Medical Sciences, Tehran, Iran.

A Rare CD70 Deficiency Patient Presenting with Recurrent Respiratory Infections and Interstitial Lung Disease

CD70 deficiency is a rare inborn error of immunity (IEI) featuring T-cell and B-cell dysregulation. We report a 40-year-old female, of consanguineous parents, diagnosed with CD70 deficiency at the age of 31. Even though symptoms began in childhood with recurrent respiratory infections, the diagnosis was delayed until adulthood. Clinical features comprised splenomegaly and progressive interstitial lung disease. Laboratory tests showed hypogammaglobulinemia (IgA <30 mg/dL, IgM 81 mg/dL, IgG 500 mg/dL), lowered B-cell markers (CD19: 0.4%, CD20: 0.2%), as well as a reduced CD4/CD8 ratio (0.4). His white blood cell count was 4500/µL with 36% lymphocytes and 55% neutrophils, and platelets were 3000/µL. Moreover, the patient has been treated with immunoglobulin (IVIG) replacement with partial clinical resolution. The present case report adds clinical management insights for CD70 deficiency patients.

Second day: April 25th

Mahsa Hosseini Kakroudi

Tehran: 13:40-13:45

Research Center for Immunodeficiences (RCID), Tehran University of Medical Sciences, Tehran, Iran.

A Novel Case of Primary Immunodeficiency: Congenital Ficolin-3 Deficiency in a Preterm Neonate

Background: Human Ficolin-3, encoded by the FCN3 gene, is an oligomeric lectin that activates the lectin complement pathway and plays a significant role in innate immunity against bacterial and viral infections. Mutations of the FCN3 gene may cause primary immunodeficiency with diverse clinical presentations, ranging from immunologic to neurologic presentations.

Case Presentation: We report a 5-year-old boy with a homozygous frameshift mutation (c.349delC) in FCN3 gene. His consanguineous parents were confirmed heterozygous carriers. He was born at 35 weeks of gestation due to oligohydramnios and embryonic hydronephrosis. He was cyanotic, tachypneic, and agitated shortly after his birth. He developed pulmonary fibrosis, oliguria, Escherichia coli meningitis, and pyelonephritis. He had chronic respiratory infections, endocarditis, hepatobiliary impairment, and drug-refractory seizures in the course of time. Whole-exome sequencing confirmed the diagnosis of congenital Ficolin-3 deficiency, an uncommon but severe primary immunodeficiency.

Conclusion: This case shows that the diagnosis of Ficolin-3 deficiency is challenging. The condition of a premature neonate with early bacterial infections along with neurological presentation, should be considered as Ficolin-3 deficiency. Increasing awareness and genetic testing at the early stage could reduce the time between onset to diagnosis, leading to more effective treatment of such cases.

Second day: April 25th

Alireza Javan

Tehran: 13:45-13:50

Iran university of medical sciences, Tehran, Iran

Familial Cold Autoinflammatory Syndrome 2 in a Pediatric Patient

Familial Cold Autoinflammatory Syndrome 2 (FCAS2) is a critical area of study within autoinflammatory diseases. FCAS2, driven by mutations in the NLRP12 gene, presents with recurrent fever, rash, and arthralgia triggered by cold exposure, emphasizing the need for effective management strategies to improve patient quality of life. This case report details a 8-month-old girl with FCAS2 who presented with recurrent fever, gastrointestinal symptoms, and developmental delays. Comprehensive diagnostics confirmed her condition, and treatment commenced with immunomodulatory therapies, including intravenous immunoglobulin (IVIG) and anakinra. The patient's clinical response was notable, with a significant reduction in inflammatory episodes. This case highlights the necessity for heightened awareness of FCAS2 in pediatric patients and the potential benefits of targeted therapies that address inflammatory dysregulation.

Second day: April 25th

Amirreza Jabbaripour Sarmadian

Tehran: 13:50-13:55

Tabriz University of Medical Sciences, Tabriz, Iran

BCG Arthritis in a Patient with Severe Combined Immunodeficiency Disorder (SCID): A Case Report

Severe combined immunodeficiency (SCID) represents a heterogeneous group of rare, life-threatening inherited primary immunodeficiency disorders characterized by profound defects in the development and function of key immune cells, primarily T cells and, in many cases, B cells. These immunological impairments predispose affected individuals to life-threatening complications, including severe infections and a markedly increased risk of mortality. More than 20 genes have been identified as responsible for these disorders, one of which is Janus kinase 3 (JAK3). This report presents a 16-month-old patient with SCID due to a genetic mutation in the JAK3 gene identified through whole exome sequencing (WES), who was undergoing treatment with IVIG and prophylactic antimicrobial medications. The patient presented with complaints of swelling, pain, and limited movement in the left elbow. In the clinical examination, the patient exhibited notable swelling, tenderness, and restricted range of motion in the left elbow, which raised concerns of a possible underlying soft tissue mass or infection. Given the persistence of symptoms and the lack of improvement with conservative management, surgical intervention was performed. Therefore, the patient underwent orthopedic surgery, during which masses and adherent tissues were excised from the elbow, and the area was thoroughly cleaned. Histopathological examination revealed numerous acid-fast bacilli, primarily intracellular and also present in extracellular spaces, suggesting BCG arthritis. Following this, the patient was started on broad-spectrum antimicrobial therapy. Although SCID patients are at high risk for severe infections, including BCG, joint involvement in these cases, as well as patients without SCID, is reactive. However, the severe joint involvement observed in our case is highly unusual, making it a rare and clinically challenging conundrum.

Second day: April 25th

Hamidreza Hasanipour

Tehran: 13:55-14:00

Pharm.D. Student, School of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Abatacept Treatment in Two Cases of LRBA Deficiency

Background: LRBA and CTLA-4 proteins regulate T cell activity. Mutations of the gene producing LRBA cause a defect in CTLA-4 activity, which leads to defect in T cell regulation. Abatacept, a biological drug, is a CTLA-4 fusion protein. Here we report two cases of LRBA deficiency treated by Abatacept.

Case Presentation: The first case is a 7-year-old girl with unrelated parents, diagnosed with a mutation in the LRBA gene. Her symptoms started at age 3, beginning with lymphadenopathy in her neck and inguinal region. At age 4, she developed hemolytic anemia that didn't respond to treatment. Later, she had lung involvement and also got fungal infections. At age 4.5, the treatment started with IVIG, Cotrimoxazole, Voriconazole, and Acyclovir. She then developed severe cough, and after receiving 6 doses of Rituximab, her symptoms improved. A year later, at the age of 6, the cough returned. She was given 3 doses of Abatacept, without appropriate response. Her symptoms improved again after receiving Rituximab.
The 2nd case is a 7-year-old girl, born to second-degree consanguineous parents, with a compound heterozygous mutation in the LRBA gene. Her symptoms began at the age of 3 years with treatment-resistant hemolytic anemia, followed by the development of granulomatous lung lesions. Laboratory evaluation showed low levels of immunoglobulins and slightly reduced levels of B cells.

Despite treatment with corticosteroids and Rituximab, the lung granulomas were not controlled, and she received Abatacept for one year, with good response.
Abatacept can be helpful in management of some patients with LRBA deficiency.

Second day: April 25th

Ayda Firouzabadi

Tehran: 14:00-14:05

Research Center for Immunodeficiences (RCID), Tehran University of Medical Sciences, Tehran, Iran.

Severe Congenital Neutropenia Caused by SRP19 Gene Mutation: A Case Report and Literature Review

Background: Severe congenital neutropenias (SCNs), are a various group of inborn errors of immunity caused by genetic mutations, leading to impaired granulopoiesis in the bone marrow or/and increased destruction of peripheral blood neutrophils. As a result, SCN is characterized by a persistence low number of peripheral blood neutrophils (ANC < 0.5 × 10^9/L). Children with SCN often suffer from recurrent, life-threatening bacterial infections that mostly affect the skin, oral mucosa, and lungs at an early age after birth. Moreover, some patients are predisposed to developing acute myeloid leukemia or myelodysplastic syndrome. Recently, a mutation in a novel gene encoding Signal Recognition Particle 19 (*SRP19*) was described as a cause of autosomal recessive SCN. *SRP19* is essential for synthesizing neutrophil granule proteins, which is highly associated with the differentiation of mature neutrophils from pluripotent Hematopoietic stem cells.

Case presentation: The patient was a 6.5-year-old boy born to a consanguineous first-degree cousin marriage, who was homozygous for a pathogenic variant (c.189+5G>A) in the *SRP19* gene. His past medical history was remarkable of failure to thrive, recurrent infections such as; pneumonia, gastroenteritis, urinary tract infection, skin and soft tissue infections exhibited by multiple skin abscesses on his thorax, lower extremities, fingers, and buttock, as well as persistent oral aphthous ulcers, gingivitis, and oral thrush. Also, he suffered from urogenital complications including bilateral undescended testicles, posterior urethral valves, neurogenic bladder, and multiple bilateral renal microlithiasis. Repeated laboratory data revealed neutropenia, with levels severely decreasing to 0.098 × 10^9/l [normal range 2-7 × 10^9/L], when he was 6 years old. At that time, granulocyte colony-stimulating factor (G-CSF) was administrated twice a week and he responded well to G-CSF. Complete blood count showed Hypochromic microcytic anemia with slight anisocytosis, hemoglobin (Hb) 10.7 g/dL [normal range: 11–16 g/dL], MCV: 73.9 fL [normal range: 80-100 fL], MCH: 23.1 pg [normal range: 27-31 pg], RDW-CV: 17.7% [normal range: 11.5-14.5%], white blood cell [WBC]: 4.25 × 10^9/L [normal range: 4-10 × 10^9/L] and platelet [PLT] 426 × 10^9/L [normal range: 150-450 × 10^9/L]). Immunological evaluation showed a marked hypergammaglobulinemia; IgG: 2058 mg/dl [normal range: 462-1680 mg/dl], IgM: 203 mg/dl [normal range: 38-251 mg/dl], IgA> 400 mg/dl [normal range: 33-202 mg/dl], and IgE: 9.8 IU/ml [normal range: <115 IU/ml]. CD3, CD4, CD8 were 62%, 20%, 40% respectively.

Conclusions: Here we identified a patient with a mutation in *SRP19* gene-related SCN presenting with various symptoms. Before this, *SRP19*-related SCN was first described by **Monika I Linder** et al. There were 2 related pedigrees with 5 patients, affected with novel *SRP19* mutation. According to our knowledge, this is the first case of SCN with *SRP19* gene mutation to be reported from Iran. This mutation may explain patient clinical picture and should be considered as a differential diagnosis for patients presented with these manifestations.

Second day: April 25th

Nafise Gholipor

Tehran: 14:05-14:10

Student research committee, Faculty of medicine, Alborz University of Medical Sciences, Karaj, Iran

A Case of Partial DiGeorge Syndrome Presented with Shingles

Background: DiGeorge syndrome (DGS), caused by 22q11.2 deletion, ranges from complete (severe thymic aplasia, cardiac defects, hypoparathyroidism) to partial forms (mild T-cell deficiency, subtle features). While recurrent infections are common, herpes zoster as an initial presentation of partial DGS is rare. This case underscores the importance of considering DGS in atypical viral reactivations.

Case presentation: Herein, we describe a relatively unusual case of partial DiGeorge syndrome. An 18-year-old female presented with an episode of herpes zoster. Despite considering the possibility of primary immune deficiency, she declined IVIG therapy. Over the years, she experienced recurrent warts and occasional herpes simplex outbreaks, raising concerns about her immune system function. At the age of 16, she developed Bell's palsy and a persistent cough, prompting hospitalization and re-evaluation of the immune system. Her past medical history included asthma, allergic rhinitis (since early childhood) and hypothyroidism. Notably, she had no history of cardiac defects, seizures, hypocalcemia, musculoskeletal abnormalities, or developmental delays. Her growth and puberty had no abnormality. Physical examination showed no craniofacial or any other dysmorphisms. She was the second child of consanguineous with a family history of early deaths. Her 19-year-old brother remained healthy. Flow cytometry revealed severe CD4 lymphopenia (CD4 = 10.9%), an extremely low CD4/CD8 ratio (0.12), and CD8 T-cell expansion (CD8 = 87.4%). She was infection free while treated with IVIG and acyclovir. Genetic testing confirmed a 22q11 deletion.

Conclusion: Atypical partial DiGeorge syndrome presented with herpes zoster and CD4+ lymphopenia despite lacking classic features, highlighting that isolated T-cell dysfunction may be the sole indicator.

(Managed with IVIG/antivirals.)

Second day: April 25th

Seyed Armin Tavakoli

Tehran: 14:10-14:15

Pharmacy school of Shahid beheshti university of medical sciences

Successful Treatment of Three Patients with Activated PI3K Delta Syndrome with Rapamycin

Background: Activated PI3K Delta Syndrome (APDS) is caused by gain-of-function mutations in PIK3CD or PIK3R1, that causes immune system imbalance. Clinical expressions include recurrent infections, lymphoproliferation, autoimmunity, and a higher risk of B-cell lymphomas. The disease is caused because of overactivation of the PI3K-AKT-mTOR signaling pathway. Sirolimus is an mTOR inhibitor demonstrated therapeutic benefit in reducing lymphoproliferation and controlling immune symptoms by targeting this abnormal pathway.

Case Presentation: The first case is a 6-year-old girl from consanguineous parents (first cousins) presenting with generalized lymphadenopathy, osteomyelitis, and autoimmune hemolytic anemia (AIHA). She has also experienced severe, treatment-resistant infections including bacterial (Streptococcus pneumoniae, Staphylococcus aureus), viral (EBV, CMV), and fungal (Candida) pathogens. Immunological tests showed high IgM, low IgA, inverted CD4/CD8 ratio, and reduced naïve T cells. Genetic tests revealed a heterozygous PIK3CD c.3061G>A mutation, that is consistent with Activated PI3K-δ Syndrome (APDS). Now she is receiving IVIG, cotrimoxazole prophylaxis, and Sirolimus.

The 2nd case is a 15-year-old boy from unrelated parents, presenting with recurrent respiratory infections, chronic otitis media, Crohn's disease, lymphoproliferation, and delayed wound healing. In his family history he had a 12-year-old deceased sibling with significant lymphadenopathy that was misdiagnosed as a Hodgkin lymphoma. He had mild developmental delay and poor wound healing. Genetic test confirmed PIK3CD c.3061G>A mutation. His treatment includes Sirolimus, corticosteroids, and IVIG.

The 3rd case is a 7-year-old girl from unrelated parents. Her history shows pneumonia and sinusitis that were recurrent and resistant to treatment, lymphadenopathy, and dental enamel hypoplasia. Immunologic tests showed CD4+ lymphopenia, increased IgM, and low IgA levels. Genetic tests confirmed a PIK3CD c.G2974A mutation. She is currently getting monthly IVIG, cotrimoxazole prophylaxis, and Sirolimus.

All 3 patients demonstrated significant improvement following the administration of Sirolimus and their disease is well-controlled after 2-3 years of treatment. They also did not develop any severe side effect. This report confirms effectiveness of Sirolimus in management of APDS.

Second day: April 25th

Sina Fadai

Tehran: 14:15-14:20

Shahid Beheshti University of Medical Sciences, Tehran, Iran

A Report of Two Cases of CD27 Deficiency in One Family with Different Phenotypes

Introduction: CD27 deficiency is a rare inborn error of immunity (IEI) that disrupts the proper function and maturation of the immune system, predisposing individuals to severe Epstein-Barr virus (EBV) infections and associated complications, including EBV-associated lymphoproliferative disorders (EBV-LPD). CD27 deficiency exhibits significant phenotypic variability, even in case of identical gene mutations.

Case Report: We report the case of a 6-year-old boy with EBV-LPD and his mostly asymptomatic sister, both harboring an identical homozygous Arg94Cys variant in CD27. A review of previously reported cases in medical literature has also been performed.

Discussion and Conclusion: Despite having an identical genetic mutation, our patient and his sister had completely different clinical phenotypes, with the sister having a vaguely increased number of episodes of common upper respiratory infections per year, and our patient having severe disease requiring treatment. CD27 deficiency demonstrates significant phenotypic variability, with presentations ranging from asymptomatic status to EBV-LPD, hemophagocytic lymphohistiocytosis (HLH), autoimmunity and malignancy; as such, genotype-phenotype correlation may be challenging.

Second day: April 25th

Parsa Alijanizadeh

Tehran: 14:20-14:25

Student Research Committee, Babol University of Medical Sciences, Babol, Iran.

Role of Toll-Like Receptors in the Growth and Progression of PIDs: Emerging Therapeutics?

Introduction: Toll-like receptors (TLRs) are a vital element of the innate immune system, responsible for recognizing and responding to pathogen-associated molecular patterns (PAMPs) and danger-associated molecular patterns (DAMPs). Primary immunodeficiency (PID) is a heterogeneous group of disorders caused by genetic defects that affect the evolution and position of the immune system. Recent studies have suggested that the TLR pathway plays a vital role in the pathogenesis of various forms of PID. This review aims to summarize the present knowledge of the involvement of TLRs in the growth and progression of PID.

Materials and Methods: We conducted a literature search using PubMed, Web of Science, and Scopus databases to identify relevant studies. The search terms included "Toll-like receptors", "primary immunodeficiency", "innate immunity", and "genetic defects". We also manually searched the reference lists of the identified studies for additional relevant articles.

Results: TLRs are described on various immune cells, including macrophages, dendritic cells, and T and B cells. They recognize various microbial pathogens, including bacteria, viruses, and fungi, through their specific ligands. Upon recognition of these ligands, TLRs activate downstream signaling pathways, producing chemokines and pro-inflammatory cytokines and the induction of adaptive immune responses. TLR defects have been linked to several types of PID, including MyD88 deficiency, IRAK4 deficiency, and TLR3 deficiency. These defects result in impaired immune responses and increased susceptibility to infections in affected individuals. TLR defects have been shown to impair immune responses and result in various clinical manifestations, including recurrent bacterial and viral infections, impaired wound healing, and autoimmune disorders. The precise mechanisms by which TLR defects contribute to the development of PID remain unclear. However, several hypotheses have been proposed, including the role of TLRs in the development and function of immune cells and their involvement in maintaining immune homeostasis.

Conclusion: TLRs play a vital role in the pathogenesis of various forms of PID, and defects in TLR signaling pathways can result in impaired immune responses and increased susceptibility to infections. This knowledge will aid in developing novel therapies and improving the management of patients with PID. The modulation of TLR signaling pathways may provide a therapeutic strategy for treating various forms of PID. However, the use of TLR agonists or antagonists in PID therapy needs careful consideration due to TLRs' complex and diverse roles in the immune system.

Second day: April 25th

Ali Rezvanimehr

Tehran: 14:25-14:30

1 Network of Immunity in Infection, Malignancy and Autoimmunity (NIIMA), Universal Scientific Education and Research Network (USERN), Tehran, Iran. 2 Researcher and elite club, Islamic Azad University, Tehran medical sciences branch, Iran.

Arteriovenous Hemangioma in a Young Female with Xeroderma Pigmentosum: A Rare Vascular Manifestation Associated with a DNA Repair Disorder

Background: Xeroderma pigmentosum (XP) is an autosomal recessive condition characterized by sunlight sensitivity resulting in sunburn and pigment changes. In the absence of complete protection from ultraviolet radiation, individuals with xeroderma pigmentosum exhibit a markedly elevated susceptibility to ultraviolet-induced cutaneous neoplasms. Arteriovenous hemangioma is a benign vascular proliferation that may present as an acquired lesion or a congenital anomaly. However, vascular anomalies are rarely reported in association with XP. We report on a patient presenting with an uncommon clinical manifestation of arteriovenous hemangiomas on the tongue.

Case presentation: A 20-year-old female with a confirmed diagnosis of XP presented with a progressively enlarging tongue mass that had persisted for three years. The lesion was unusual in the context of XP, a genetic condition associated with increased vulnerability to ultraviolet radiation and malignancies. Differential diagnoses included pyogenic granuloma, traumatic fibroma, angiosarcoma, fibrosarcoma, and squamous cell carcinoma (SCC). Histopathological analysis confirmed the lesion as an arteriovenous hemangioma.

Conclusions: Clinicians should be aware that benign vascular tumors like arteriovenous hemangioma can occur in patients with XP.

Second day: April 25th

Amir Amouzadeh

Tehran: 14:30-14:35

Research Center for Immunodeficiences (RCID), Tehran University of Medical Sciences, Tehran, Iran.

Atypical Presentation of Ataxia Telangiectasia with Psoriasis: A Case Report

Ataxia Telangiectasia (AT) is a rare, inherited neurodegenerative disorder that primarily manifests with progressive cerebellar ataxia, ocular telangiectasia, immunodeficiency, and hypersensitivity to ionizing radiation. Ataxia Telangiectasia (AT) presents a wide range of symptoms, which can make diagnosing the condition quite challenging. This report presents a case of a 24-year-old woman with an atypical form of AT, which emphasizes the importance of early genetic diagnosis and multidisciplinary management.

The patient was born full-term and was the third child of consanguineous parents. There were no significant complications during the pregnancy. Her first clinical symptoms appeared when she was 8 years old, which included a moderate ataxic gait and mild ocular telangiectasia. Initial neurological examinations were normal. However, as the disease progressed, she developed severe movement disabilities and dysarthria, which forced her to discontinue her education at the age of 12.

Although her neurological condition continued to worsen, the patient was fully vaccinated up until the age of 22, without any complications. At 22, she began experiencing persistent and severe psoriasis plaques that were itchy and didn't respond to several topical treatments. A biopsy of the affected skin confirmed the psoriasis diagnosis, and she was prescribed adalimumab. Further lab results revealed significantly low IgA levels and elevated alpha-fetoprotein (AFP) levels, pointing to an immune system disturbance. Most crucially, genetic testing uncovered a homozygous stop-gain mutation in the ATM gene (c.6658C>T, p.Q2220*), which confirmed the diagnosis of Ataxia Telangiectasia (AT).

Further immunological evaluation revealed abnormalities in her immune profile, including reduced levels of CD8+ and CD4+ T cells, as well as diminished memory B cells. Additionally, her sensitivity to radiation was higher than normal, which is typical for patients with AT. Despite these challenges, the patient is still able to walk on her own without any need for walking aids, and maintains stable clinical and laboratory conditions.

This case emphasizes the variability in AT's clinical manifestations and the necessity for genetic testing in patients presenting with neurological and immunological abnormalities. The report also highlights the potential role of biologic treatments, such as adalimumab, in managing autoimmune manifestations like psoriasis in AT patients. The patient's distinctive case adds valuable insight into the various ways AT can manifest and emphasizes the need for effective, personalized treatment strategies to manage this complex condition.

Second day: April 25th

Nazanin Abbasi

Tehran: 14:35-14:40

Student Research Committee, Faculty of Medicine, Mashhad Medical Sciences, Islamic Azad University, Mashhad, Iran.

Machine Learning for Predicting Immunodeficiency Patterns in Autoimmune and Immunodeficiency Disorders; A Systematic Review

Background: Immunodeficiency diseases including primary (PID), secondary (SID), and autoimmune associated vulnerable dysfunction (e.g., in systemic lupus erythematosus, SLE) _ disguise significant individual challenges due to overlapping clinical features and delayed discovery. While PIDs frequently suffer from diagnostic delays of 6–9 times, SIDs lack dependable tools for prognosticating infection pitfalls, and SLE cases parade paradoxical immunodeficiency alongside autoimmunity. Artificial intelligence (AI) and machine learning (ML) have surfaced as promising results, leveraging EHRs, biomarkers, and genomics to ameliorate early opinion, threat position, and substantiated operation. Any systematic review has exhaustively estimated AI's part across these connected immunodeficiency disciplines, yet. This study synthesizes current substantiation on AI/ML operations in (1) PID/SID opinion, (2) infection prediction in secondary and autoimmune linked immunodeficiency, and (3) biomarker discovery, pressing gaps and unborn directions for perfection immunology.

Method and Search Strategy: We searched PubMed, Web of Science, Scopus, and Google Scholar (2014 –2025) using AI/ML and immunodeficiency/ autoimmune terms. From 344 initial records, 78 underwent full- textbook review, with 43 studies included. Data on models, datasets, and performance were extracted independently by two authors.

Results: Machine learning (ML) models — particularly ensemble styles like Random Forest (RF) and Gradient Boosting Machine (GBM) — demonstrated high delicacy in immunodeficiency operations

- SLE RF achieved 94 delicacy (AUC 0.94) in detecting immunodeficiency patterns (e.g., low NK cells, IgG3).

-Secondary Immunodeficiency (SID) GBM prognosticated pathogens with 91 delicacy (AUC 0.98), using biomarkers like procalcitonin.

- Superiority Ensemble styles outperformed traditional models (KNN, SVM) by 7–13 in bracket tasks.

Conclusion: ML enables early discovery of immunodeficiency and precise pathogen prediction in SLE/SID, offering clinically practicable perceptivity. unborn work must prioritize multi-center confirmation and resolvable AI for flawless integration into healthcare workflows.

Second day: April 25th

Kimia Kazemzadeh

Tehran: 14:40-14:45

Network of Neurosurgery and Artificial Intelligence (NONAI), Universal Scientific Education and Research Network (USERN), Tehran, Iran.

AI-Driven Diagnostic Innovations in Primary Immunodeficiency Diseases

Primary immunodeficiency diseases (PIDs) represent a diverse group of disorders characterized by complex clinical presentations and extensive genetic heterogeneity, often resulting in delayed diagnoses and increased healthcare costs. Artificial intelligence (AI) has emerged as a transformative tool to address these diagnostic challenges by leveraging machine learning (ML) algorithms to analyze large-scale patient data and identify subtle patterns indicative of PIDs. Recent advancements highlight the integration of AI into clinical workflows for PID diagnosis. For instance, researchers at Vanderbilt University have standardized medical data by mapping ICD codes to Human Phenotype Ontology (HPO)-based phecodes, enabling precise phenotype capture. Similarly, the INTREPID team at University College London cataloged phenotypic features of 886 PID patients using HPO tools, assigning numeric risk scores to phenotypes. Other researchers further enhanced this approach by developing the Phenotype Risk Score (PheRS), which weights clinical features based on their inverse population prevalence, demonstrating its utility in identifying rare genetic disorders like cystic fibrosis. AI-driven tools such as PhecodeX and the Phenotype-Genotype Reference Map (PGRM) have facilitated open science initiatives, while expert-driven models like PIDCAP have identified key warning signs such as bronchiectasis and recurrent infections. Machine learning applications trained on large datasets have reduced diagnostic delays significantly, as demonstrated by Universitair Medisch Centrum Utrecht's ML model, which shortened diagnostic timelines by approximately three years in a cohort of 60,000 individuals. Notably, UCLA researchers have developed regression models trained on CVID patients using phecodes and IgG levels, achieving early identification of undiagnosed cases with remarkable accuracy. These innovations underscore the potential of AI to revolutionize PID diagnostics by addressing persistent challenges in recognizing heterogeneous disease presentations. This review examines current AI methodologies applied to PID diagnostics, emphasizing their ability to expedite detection, reduce healthcare costs, and improve patient outcomes. By advancing computational tools and fostering interdisciplinary collaboration, AI holds promise for transforming the landscape of rare disease diagnosis globally.

Second day: April 25th

Abtin Abdous

Tehran: 14:45-14:50

1- Department of Clinical Sciences, Garmsar branch, Islamic Azad University, Semnan, Iran; 2- Department of Clinical Sciences, Karaj branch, Islamic Azad University, Alborz, Iran; 3-Department of Clinical Sciences, Shoushtar branch, Islamic Azad University, Shoushtar, Iran; 4- Department of Clinical Sciences, Islamic Azad University, Tehran, Iran
5- Department of Immunology and Allergy, Imam Khomeini Hospital, Tehran University of Medical Sciences, Tehran, Iran

A Case with Wiskott-Aldrich Syndrome

Background: Wiskott-Aldrich Syndrome (WAS) is a rare X-linked recessive primary immunodeficiency characterized by a triad of thrombocytopenia, eczema, and recurrent infections. It can also predispose individuals to autoimmune manifestations and hematologic malignancies. Early recognition and genetic confirmation are essential for proper management and improved outcomes.

Case Presentation: We report a complex case of a 12-year-old male with no known family history of immunodeficiency, although his mother had multiple sclerosis and his father had polio. The patient first presented at 1.5 months of age with hypertrophic pyloric stenosis and was incidentally found to have thrombocytopenia, initially diagnosed as immune thrombocytopenic purpura (ITP). Despite standard treatment, he developed recurrent infections, including meningitis, as well as gastrointestinal symptoms later attributed to Crohn's disease—raising suspicion of an underlying immunological disorder. By age five, persistent thrombocytopenia, mild eczema, and frequent epistaxis prompted further workup. Genetic testing revealed a hemizygous pathogenic mutation (c.777+1 G>A) in exon 8 of the WAS gene, confirming the diagnosis of Wiskott-Aldrich Syndrome. Supportive care was initiated, including intravenous immunoglobulin (IVIG) infusions every 3–4 weeks, leading to a reduction in infection frequency and severity. At age 12, the patient presented with fever, vomiting, abdominal pain, worsening thrombocytopenia, and recurrent epistaxis. Laboratory findings included elevated ESR, hyperlipidemia, raised LDH, and significant proteinuria suggestive of nephrotic syndrome. Imaging revealed bronchiectasis, lymphadenopathies, epididymitis, mild ascites, and gallbladder sludge suggestive of gallstones. A lymph node biopsy was not performed due to severe thrombocytopenia. Treatment included sirolimus, corticosteroids, albumin infusions, platelet transfusions, and broad-spectrum antibiotics. Cyclosporine was administered for aphthous stomatitis and a urinary tract infection caused by *E. coli*. Over the next six months, the patient developed arthritis and recurrent infections, managed with escalated IVIG doses, antivirals, and antibiotics. Eventually, he developed lymphoma, which responded well to chemotherapy. Hematopoietic stem cell transplantation was not pursued.

Conclusion: This case highlights the diagnostic challenges and multisystem involvement seen in Wiskott-Aldrich Syndrome. It underscores the importance of considering genetic immunodeficiencies in patients with atypical infection patterns and autoimmune features. Despite the absence of curative stem cell transplantation, this patient's condition was stabilized through vigilant monitoring, immunoglobulin replacement, and individualized medical therapy. A multidisciplinary approach is critical in managing the evolving complications of this complex immunodeficiency.

Second day: April 25th

Mahsa Yousefpour

Tehran: 14:50-14:55

Research Center for Immunodeficiencies, Tehran University if Medical Sciences

Immune Dysregulation Following Haploidentical Hematopoietic Stem Cell Transplantation Pediatric Patients

Haploidentical hematopoietic stem cell transplantation (haplo-HSCT) has become a crucial treatment option for pediatric patients lacking fully HLA-matched donors. Despite its growing use, immune dysregulation remains a significant post-transplant challenge, primarily manifesting as graft-versus-host disease (GVHD) and impaired immune reconstitution.This presentation reviews the immunological consequences of various conditioning and GVHD prophylaxis regimens employed in pediatric haplo-HSCT. The intensity of conditioning—myeloablative or reduced-intensity—is determined by disease characteristics, patient age, and comorbidities, each influencing engraftment success and the pace of immune recovery. Post-transplant cyclophosphamide (PTCy) has gained prominence as a GVHD prophylactic strategy due to its capacity to selectively eliminate proliferating alloreactive T cells, thereby supporting engraftment and modulating post-transplant immune responses. However, concerns remain regarding its cytotoxicity and potential to impair broader aspects of immune function. Alternatively, pre-transplant administration of anti-thymocyte globulin (ATG) offers broader T cell depletion and has been associated with reductions in GVHD incidence. Nonetheless, this approach often leads to extended immunosuppression and increased susceptibility to opportunistic infections due to delayed immune recovery. A dual approach combining low-dose PTCy with ATG has recently been explored to optimize immune modulation by targeting alloreactive T cells at multiple stages. This strategy aims to reduce GVHD risk while minimizing toxicity and promoting immune reconstitution. Preliminary evidence suggests promising outcomes in high-risk pediatric settings, although further controlled studies are necessary. This analysis highlights the need for personalized, immune-informed strategies to improve transplant success and long-term immune competence in pediatric haplo-HSCT.

Second day: April 25th

Leyla Norouzi-Barough

Tehran: 14:55-15:00

Immunodeficiency Diseases Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Clinical and Genetic Insights into Mendelian Pyoderma Gangrenosum: A Systematic Review of 120 Patients and a Case Report of a Patient with Leukocyte Adhesion Deficiency Type I

Pyoderma gangrenosum (PG) is a rare neutrophilic dermatosis characterized by sterile, recurrent ulcers and a predominantly multifactorial etiology. However, in a subset of patients with Mendelian mutations, PG can present as part of a genetic syndrome. This study aims to systematically review the clinical and genetic characteristics of patients with Mendelian susceptibilities to PG, alongside a case report highlighting the intersection of PG with leukocyte adhesion deficiency type I (LAD-I).

We conducted a comprehensive literature search encompassing case reports, series, and original articles focusing on genetic variants associated with PG. From an initial screening of 1,577 articles, we selected 79 studies for quantitative analysis, encompassing 120 PG patients and identifying 19 distinct genes linked to PG susceptibility. The most prevalent mode of inheritance observed was autosomal dominant, with a mean age of onset at 23.39 ± 19.76 years. Notably, 17 of the identified genes are classified under the Inborn Errors of Immunity (IEI) compiled by the International Union of Immunological Societies (IUIS), with a significant proportion (37%) associated with “autoinflammatory disorders”. All identified genes were linked to cutaneous ulcerations, with PSTPIP1 and MEFV being the only genes associated with all three lesion types (cutaneous, anogenital, and mucosal). PSTPIP1 emerged as the most frequently reported PG-related gene, followed by MEFV, ITGB2, NOD2, NFKB1, RAG1, JAK2, and NCSTN. The most common infectious agent identified in PG lesions was Pseudomonas aeruginosa.

In a case report, we present a 43-year-old woman from a consanguineous marriage diagnosed with LAD-I in childhood, who developed recurrent severe PG-like lesions alongside atypical manifestations including celiac disease and diminished CD19 B-cell subsets. Genetic testing revealed a novel homozygous missense variant c.988T>C (Tyr330His) in the ITGB2 gene. Despite treatment with prednisolone, cyclosporine, and antibiotics leading to partial improvement, the patient ultimately discontinued therapy and succumbed to septicemia. This case underscores the critical need for early intervention, such as hematopoietic cell transplantation (HCT), which can be effective in managing LAD and preventing severe infections. However, evidence indicates that HCT does not preclude the development of autoinflammatory and autoimmune conditions like PG, necessitating vigilant monitoring of LAD patients for PG even post-transplantation.

This systematic review and case report collectively highlight the significant role of genetic factors in the pathogenesis of PG and the importance of early diagnosis and management in patients with genetic predispositions. Understanding the underlying genetic mechanisms may facilitate the development of targeted therapeutic strategies for PG, improving patient outcomes and quality of life.

Second day: April 25th

Mahsa Iravani

Tehran: 15:00-15:05

Department of Immunology, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Report of Bone Marrow Failure in Two Cases of ADA2 Deficiency

Background: Adenosine deaminase 2 (ADA2) deficiency is a systemic autoinflammatory disorder caused by biallelic loss-of-function mutations in the ADA2/CECR1 gene, inherited in an autosomal recessive pattern. The disruption of hematopoiesis in this condition occurs due to immune dysregulation, inflammation, and direct damage to bone marrow progenitor cells, ultimately leading to cytopenia and bone marrow failure syndromes. Here we report two cases of ADA2 deficiency with bone marrow failure.

Case 1 presentation: The patient was an 11-year-old girl born to a consanguineous marriage who was homozygous for a likely pathogenic variant in the ADA2 gene (c.607G>T p. val203phe chr22 hom). She initially suffered from abdominal pain, ulcer, and recurrent fever. Then she developed CNS involvement. At the age of 9 years old, she was diagnosed with bone marrow failure, evidence by pancytopenia and hypocellular bone marrow. She also had a history of CMV and pneumonia infections. Complete blood count showed hemoglobin (Hb) 10.6 g/dL [normal range: 12.3–15.3 g/dL], white blood cell [WBC]: 1.5 × 109/L [normal range: 4-11 × 109/L] and platelet [PLT] 81 × 109/L [normal range: 150-450 × 109/L]) Immunological evaluation showed a low level of IgA: 37 [normal range: 44-395 mg/dl], IgG: 465 mg/dl [normal range: 500-1300 mg/dl], IgM: 37 mg/dl [normal range: 55-210 mg/dl], and IgE: 1950 mg/dl [normal range: <200 mg/dl]. The percentage of CD3, CD4, CD8, CD19, CD20, were 63%, 34%, 19%, 14%, 15% respectively, all within normal ranges, but she had reduced expression of CD27.

Case 2 presentation: An 11-year-old female patient, born to consanguineous marriage, She initially presented with recurrent fever, oral aphtous and pancytopenia. Complete blood count showed hemoglobin (Hb) 10.4 g/dL [normal range: 12.3–15.3 g/dL], platelet [PLT] 70 × 109/L [normal range: 150-450 × 109/L]) white blood cell [WBC]: 1.2 × 109/L [normal range: 4-11 × 109/L. Immunological evaluation was normal. She was diagnosed with bone marrow failure and genetic study reported a homozygous ADA2 gene mutation.

Conclusions: ADA2 deficiency has a wide spectrum of diverse manifestations that are not necessarily related to clinical immunodeficiency but also bone marrow failure.

Second day: April 25th

Maryam Sadat Seyedmehdi

Tehran: 15:05-15:10

Shahid Beheshti University, Tehran, Iran

Down Syndrome Associated with Immunodeficiency: A Case Report

Background: Annually, over 1200 new cases of Down Syndrome (DS) are born in Iran- the most common genetic disorder associated with intellectual disability. DS is characterized by a range of features, including dysregulation of the immune system in both innate and adaptive systems. Individuals with Down Syndrome exhibit increased autoimmunity prevalence and more severe infections compared to the general population, highlighting the need to elucidate immune system mechanisms in this group. Herein we aim to discuss a patient with Down Syndrome associated with immunodeficiency.

Methods: We present the case of a 9-year-old male patient with Down syndrome, born to consanguineous parents. His primary clinical manifestations related to inborn errors of immunity include recurrent respiratory infections, sinusitis, and otitis media. Immunological workup was performed and the percentage of CD3+, CD19+, CD20+, CD16+, CD56+, CD4+, CD8+, CD4+CD45RA+, CD4+CD45RO+, CD8+CD45RA+, and CD8+CD45RO+ cells were determined using multicolor flow cytometry, analyzing B and T lymphocytes (including naïve and memory populations) and NK cells. Serum immunoglobulin levels, anti-tetanus and anti-diphtheria IgG titers were assessed. Lymphocyte transformation tests (LTT) were also performed.

Results: Our patient exhibited neutropenia, with normal serum levels of IgM, IgA, IgG, and IgE. Notably, immunological profiling revealed markedly low CD19+ B lymphocytes, reduced CD4+CD45RA+ and CD8+CD45RA+ naïve T-cell subsets, and an intact antibody response to diphtheria and tetanus vaccinations. Additionally, lymphocyte transformation tests (LTT) showed normal proliferative responses to both phytohemagglutinin (PHA) and bacille Calmette-Guérin (BCG).

Conclusion: We observed evidence of immunodeficiency in our patient with Down Syndrome. Given these findings, we propose that immunodeficiency screening should be considered essential in patients with this clinical and immunological profile.

Second day: April 25th

Marjan Sadat Seyedmehdi

Tehran: 15:10-15:15

Kermanshah University of Medical Sciences, Kermanshah, Iran

Sweet Trouble: A Case Report on Immune Dysfunction in Congenital Disorders of Glycosylation

Introduction: Congenital disorders of glycosylation (CDG) comprise around 170 rare genetic metabolic diseases. Glycosylation is a vital post-translational modification that influences numerous biological processes, including immune response. Disruptions in glycosylation can impact disease progression, as seen in CDG. The 2024 IUIS classification of inborn errors of immunity recognizes 11 CDG types associated with immunodeficiency across five categories; however, the immunological implications of most other CDG types remain poorly understood.

Methods: We report a case of a patient diagnosed with a congenital disorder of glycosylation. The patient is a 2-year-old boy diagnosed with FUT8-CDG, homozygous for c.1498dupG (p.Q502Pfs*19). The patient is the second child of the family and was born to consanguineous parents. He was characterized by failure to thrive, developmental delay, seizure, hypotonia, and history of multiple hospitalizations due to recurrent severe respiratory infections. The percentage of CD3+, TCRαβ+,
TCRγδ+, CD19+, CD19+CD27+, CD20+, CD16+, CD56+, CD4+, CD8+, CD4+CD45RA+, CD4+CD45RO+, CD8+CD45RA+, and CD8+CD45RO+ cells were determined using multicolor flow cytometry, analyzing B and T lymphocytes (including naïve and memory populations) and NK cells. Serum immunoglobulin
levels, anti-tetanus and anti-diphtheria IgG titers were assessed. Lymphocyte transformation tests (LTT) were also performed.

Results: FUT8-CDG patient showed neutropenia, low percentage of CD3+ lymphocytes, low CD8+CD45RO+ memory T cells and poor response to diphtheria vaccination. Lymphocyte transformation testing (LTT) revealed a normal response to the mitogen PHA, but an impaired response to the antigen BCG.

Conclusion: We observed evidence of immunodeficiency in FUT8-CDG. Given the diverse genetic and clinical spectrum of CDG, immunodeficiency screening is essential for these patients.

Second day: April 25th

Alma Naseri

Tehran: 15:15-15:20

Research Center for Immunodeficiences (RCID), Tehran University of Medical Sciences, Tehran, Iran.

A Complex Immuno-Neurological Presentation in a Pediatric Patient with a Large Deletion in the ATM Gene

Ataxia-telangiectasia (AT) is a rare autosomal recessive multisystem disorder caused by mutations in the ATM gene. Key features of this condition include immunodeficiency, oculocutaneous telangiectasia, progressive cerebellar ataxia, and heightened cancer susceptibility. We describe a case of a 13-year-old girl who had suffered from a long and complex clinical course before being diagnosed with AT. Her parents are consanguineous, and there is no family history of immunodeficiency. Additionally, she had previously achieved normal developmental milestones.

After being diagnosed with immune thrombocytopenic purpura (ITP) at age three due to spontaneous bruising, purpura, and thrombocytopenia, the patient had prednisolone treatment for two years. She was readmitted to the hospital at age 6 because of deteriorating skin lesions, and granulomatous inflammation was found in skin and bone marrow samples. Her neurological conditions worsened with time, including splenomegaly, ataxic gait, telangiectasia, strabismus, mild head and trunk tremor, dystonia, and dysarthria.

Laboratory tests indicated a hyper IgM phenotype, characterized by elevated alpha-fetoprotein (AFP) levels at 132.7 IU/mL, decreased immunoglobulin A (IgA) at 20.1 mg/dL, normal immunoglobulin G (IgG) levels, and increased immunoglobulin M (IgM) at 302.1 mg/dL. Immunophenotyping of lymphocytes showed a significant reduction in naïve and memory T and B cell subsets, with nearly absent memory B cells, as well as a notable decrease in CD8+ T cells and CD4+ central memory T cells. In addition to experiencing hearing loss, the patient frequently suffered from infections, particularly of the ears and eyes. At age 12, genetic testing confirmed the diagnosis of Ataxia Telangiectasia (AT) by identifying a homozygous large deletion involving exons 37–48 of the ATM gene. This variation, which is associated with a severe phenotype, is classified as pathogenic (PVS1).

The patient passed away from respiratory infections at the age of 13 despite only minimal neurological deterioration. This highlights the significant impact of immunodeficiency in AT, even in patients with relatively minor neurodegenerative symptoms. The significance of taking AT into account when young patients present granulomatous inflammation and ITP is shown by this specific case, mainly when neurological symptoms and increased AFP are present. Early genetic testing and a comprehensive analysis of the immune system are essential for accurately diagnosing AT, guiding treatment, and providing appropriate genetic counseling.

Second day: April 25th

Tahereh Alipour

Tehran: 15:20-15:25

Nervous System Stem Cells Research Center, Semnan University of Medical Sciences, Semnan, Iran

Non-Infectious Problems of Interstitial Lung Disease (ILD) in Patients with Chronic Granulomatous Disease (CGD): A Systematic Review

Introduction: Chronic granulomatous disease (CGD) is a rare primary immunodeficiency caused by mutations in the genes encoding the NADPH oxidase complex, leading to impaired reactive oxygen species (ROS) production. This dysfunction predisposes patients to recurrent and severe infections, as well as dysregulated inflammatory responses. Among the various complications observed in CGD, interstitial lung disease (ILD) stands out as a significant non-infectious manifestation. ILD in CGD is characterized by inflammation and fibrosis of the lung parenchyma, which can result in restrictive lung disease and impaired gas exchange. While infectious etiologies are often considered in CGD-related pulmonary complications, non-infectious causes such as hypersensitivity pneumonitis (HP) and autoimmune phenomena have been increasingly recognized.

MATERIALS AND METHODS: A systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A comprehensive search of electronic databases, including PubMed, Google Scholar, and Scopus, was performed using a combination of MeSH terms and free-text keywords related to "chronic granulomatous disease," "interstitial lung disease," and "non-infectious manifestations. Two independent reviewers screened titles and abstracts for eligibility, followed by a full-text review of potentially relevant studies. Studies were included if they reported original data on non-infectious ILD in CGD patients, based on either prospective or retrospective designs. Data extraction focused on patient demographics, clinical characteristics, diagnostic methods, and outcomes.

Results: The initial search yielded 398 potentially relevant studies. After screening titles and abstracts, 45 articles underwent full-text review, of which only four met the inclusion criteria. These studies collectively highlighted the role of non-infectious mechanisms in the pathogenesis of ILD among CGD patients. Key findings included the association between hypersensitivity pneumonitis (HP) and chronic antigen exposure in CGD, as well as the impact of systemic hyperinflammation on lung pathology. Elevated levels of inflammatory cytokines, such as interleukin-1 (IL-1) and tumor necrosis factor (TNF), were consistently reported across studies. Additionally, imaging studies revealed reticulo-nodular opacities and elevated serum markers like KL-6 in patients with X-linked CGD who developed ILD.

Discussion: The findings of this systematic review underscore the importance of non-infectious factors in the development of ILD in patients with CGD. Persistent hyperinflammation, driven by defective NADPH oxidase activity, appears to play a central role in the pathogenesis of ILD. This is evidenced by increased granuloma formation and elevated levels of pro-inflammatory cytokines in affected individuals. The use of anti-inflammatory therapies, such as corticosteroids and thalidomide, demonstrated some efficacy in alleviating clinical symptoms, highlighting the need for tailored treatment strategies.

Conclusion: This systematic review highlights the complex interplay between genetic predisposition, immune dysregulation, and environmental factors in the development of non-infectious ILD in CGD patients. Early recognition and management of ILD are essential to mitigate morbidity and mortality in this population. Further studies are warranted to better understand the pathophysiological mechanisms and to develop targeted interventions that address both infectious and non-infectious complications of CGD.

Second day: April 25th

Hesam Malekfarnood

Tehran: 15:25-15:30

Shiraz university of medical sciences, Shiraz, Iran

Beyond Immunodeficiency: The Neurodevelopmental Spectrum in Severe Combined Immunodeficiency

Severe Combined Immunodeficiency (SCID) includes genetic disorders characterized by significant cellular and humoral immunity deficiencies. While it was initially recognized for its effects on the immune system, recent discoveries have also revealed significant neurodevelopmental comorbidities associated with different SCID genetic subtypes. This review seeks to consolidate knowledge about the molecular, cellular, and biological mechanisms contributing to neurodevelopmental challenges in SCID patients. Deficiencies in DNA repair are pivotal in several SCID types exhibiting neurodevelopmental symptoms. Mutations in essential genes involved in the non-homologous end joining (NHEJ) pathway- like NHEJ 1/XLF, LIG 4, XRCC 4, and PRKDC- result in immune shortcomings and neurological issues. Conditions related to XRCC 4 include microcephalic primordial dwarfism alongside varying levels of neurodevelopmental delay. Similarly, mutations in NHEJ 1 (Cernunnos/XLF) lead to microcephaly, growth delays, and SCID traits. Adenosine Deaminase (ADA) deficiency accounts for around 18% of autosomal recessive SCID cases and is frequently associated with neurodevelopmental difficulties. The accumulation of toxic metabolites disrupts vital neurological functions by impairing DNA synthesis, altering methylation patterns, and disrupting neurotransmitter signaling through adenosine receptor pathways. Other molecular mechanisms involve transcriptional regulation disturbances, as indicated by BCL11B variants that influence both immune and neuronal development. Pathogenic BCL11B variants exhibit genotype-phenotype correlations, with mutations in the DNA-binding domain leading to more severe and diverse clinical presentations. The YAP/TAZ signaling pathway is a key intersection between immune regulation and neurodevelopment, interacting with several pathways (EGFR/ErbB, Notch, Wnt) that are significant to both systems.

Cellular mechanisms linking immune and neural dysfunctions include dysregulated purine metabolism, which adversely affects lymphocyte function and neuronal growth, disruptions in DNA repair pathways that jeopardize immune diversity and the neural genome's integrity, and shared transcriptional networks essential for both systems. A comprehensive understanding of these interconnected mechanisms is vital for improving diagnosis, prognostication, and potential treatments for neurodevelopmental challenges in SCID patients. Prompt diagnosis through newborn screening, comprehensive genomic analysis, appropriate immune reconstitution strategies, and neurodevelopmental support constitute the better approach for managing these complex disorders.

Second day: April 25th

Mahshid Shahmoradi

Tehran: 15:30-15:35

1. Network of Immunity in Infection, Malignancy and Autoimmunity (NIIMA), Universal Scientific Education and Research Network (USERN), Tehran, Iran.
2. Department of Immunology, Faculty of Medicine, Birjand University of Medical sciences, Birjand, Iran

Molecular Diagnosis of Chronic Granulomatous Disease: A CYBB Gene Mutation in an Iranian Patient

Introduction: X-linked chronic granulomatous disease (X-CGD) is an autosomal recessive inherited immunodeficiency disorder due to mutations in the CYBB gene encoding the gp91^phox^ protein, a key subunit of the phagocyte NADPH oxidase complex. The NADPH oxidase complex is the enzyme that produces the reactive oxygen species (ROS) required for pathogen killing. CYBB mutations lead to a non-functional enzyme complex, hence an impaired immune response, frequent infection, and granuloma formation. The purpose of this study is to report and describe a new mutation of the CYBB gene in an X-CGD patient, with background on the genetic and potential clinical implications of the mutation.
Methods: The patient, a male with a known family history of X-linked chronic granulomatous disease (X-CGD), exhibited repeated bacterial and fungal infections over time. Based on his clinical presentation, diagnostic tests including the nitroblue tetrazolium (NBT) test and the dihydrorhodamine 123 (DHR 123) assay were performed, both of which confirmed impaired production of reactive oxygen species (ROS). To investigate the underlying genetic cause, genomic DNA was extracted from the patient's peripheral blood leukocytes. The *CYBB* gene was initially screened using single-strand conformation polymorphism (SSCP) analysis, a method that detects potential mutations by revealing shifts in DNA structure. Any abnormal SSCP patterns were then subjected to direct sequencing to accurately identify the specific genetic alteration.
Results: SSCP analysis revealed an irregular banding pattern in exon 8 of the CYBB gene. Sequencing revealed a nucleotide substitution at position 880 C>T that generates a premature stop codon at amino acid 290 (Arg290*). This is a nonsense mutation that should terminate the gp91^phox^ protein and lead to loss of function. A nucleotide change was observed in the CYBB gene promoter region (-270 C>A). The potential impact of this promoter variant on gene expression is not known and requires further investigation.
Conclusion: Detection of a novel CYBB mutation (880 C>T in exon 8) in the current patient with X-CGD contributes to the expanding spectrum of genetic defects seen with the disease. The created premature termination codon at position Arg290 would lead to production of an inactive gp91^phox^ protein and eventually cripple the NADPH oxidase complex as well as make the patient immunocompromised. Recognition of a novel variant in the promoter region of CYBB highlights the complex regulation of genetics in X-CGD and suggests that this variant is probably implicated in gene modulation, but its clinical significance must be explored. This observation highlights the importance of comprehensive genetic analysis in the diagnosis and management of X-CGD and provides critical information for patient care and genetic counseling.

Second day: April 25th

Anahita Gharagozlou

Tehran: 15:35-15:40

Tehran

Investigation of CVID and Its Role in the Development of Secondary Infections

Background: Common Variable Immunodeficiency (CVID) encompasses a group of disorders marked by primary hypogammaglobulinemia. Numerous studies have reported both B and T lymphocyte abnormalities in affected individuals. Clinically, CVID presents with recurrent respiratory tract infections, lymphoproliferative disorders, and a range of autoimmune or inflammatory complications.
A notable immunological finding in CVID is the significant expansion of CD21^low B cells—an atypical subset derived from chronically stimulated B cells. Elevated levels of these cells have also been observed in patients with concomitant CVID and immune thrombocytopenic purpura (ITP), in comparison to those with CVID alone. Recent research suggests that CD21^low B cells may play a pivotal role in bridging the immune dysregulation between infectious susceptibility and autoimmunity, implicating them in the pathophysiology of CVID.

Methods: This review is based on the evaluation and synthesis of findings from relevant published literature.

Results: Autoimmune manifestations, particularly ITP and autoimmune hemolytic anemia (AIHA), are frequently encountered in individuals with CVID. Additionally, many of these patients exhibit lymphoproliferative features. Clinical data indicate that individuals presenting with recurrent infections alongside autoimmune hematologic disorders should undergo evaluation for underlying CVID.

Conclusion: CVID represents a complex and heterogeneous immune deficiency with both infectious and non-infectious presentations. While immunoglobulin replacement therapy effectively mitigates infectious episodes, non-infectious complications—including inflammatory and neoplastic manifestations—remain a significant clinical challenge. The presence of severe B and T cell dysfunctions, particularly in patients with systemic non-infectious complications, highlights the need for comprehensive immunophenotyping to enhance pathophysiological understanding and inform therapeutic development. Delayed diagnosis and persistent inflammatory activity significantly worsen long-term outcomes. Furthermore, the immune dysregulation seen in CVID may contribute to an increased risk of malignancy.

Second day: April 25th

Kosar Zolfaghari

Tehran: 15:40-15:45

Universal Scientific Education and Research Network (USERN), Tehran, Iran

Chemo and Bioinformatics-driven design: Tailoring chemical therapies for primary immunodeficiencies in pediatric patients

Pediatric patients suffering from primary immunodeficiencies (PIDs) experience a substantial amount of disease as a result of their compromised immune system. This study investigates the promising possibility of utilizing bioinformatics-driven design to create customized chemical remedies for patients who are more susceptible to certain conditions. We will explore the utilization of bioinformatic tools to examine the genetic composition of primary immunodeficiency disorders (PIDs) in children, detecting significant genetic alterations and their corresponding biological pathways. Expanding on this study, the talk will demonstrate how this knowledge may be utilized to direct the development of specific chemical treatments using a chemistry-focused approach. We will investigate how these customized medicines try to target the precise biochemical abnormalities that are the root cause of each child's primary immunodeficiency disorder (PID). This study will emphasize the potential of this integrated strategy to completely transform the treatment of primary immunodeficiency disorders (PIDs) in children, resulting in enhanced therapeutic results and the emergence of a new era of customized medicine.

Second day: April 25th

Tara Shahmoradi

Tehran: 15:45-15:50

Alzahra University, Tehran, Iran

Non-Coding RNAs in B Cell Maturation: A Review of Their Emerging Roles in Primary Immunodeficiency Disorders

Primary immunodeficiency disorders (PIDs) are a group of heterogeneous, inherited diseases characterized by defects in the development and function of immune cells, which predispose to increased susceptibility to infection and immune dysregulation. Among these, defects in B cell maturation are the characteristic feature of some of the more common PIDs, including Common Variable Immunodeficiency (CVID), X-linked Agammaglobulinemia (XLA), and hyper-IgM syndromes.

This intricate process of development is orchestrated by a group of molecular reactions, and non-coding RNAs (ncRNAs) have been shown to be critical modulators of gene expression. Long non-coding RNAs (lncRNAs) and microRNAs (miRNAs), two of the better-characterized classes of non-coding RNAs, have been shown to have crucial roles in the regulation of B cell development, differentiation, and function.

LncRNAs, transcripts greater than 200 nucleotides in length, carry out their regulatory functions through an array of mechanisms involving chromatin modification, transcriptional regulation, and post-transcriptional processing, and are also oncogenes and tumor suppressor genes. MicroRNAs are short non-coding RNAs that typically reduce the translation, and frequently the steady state concentrations, of the target messenger RNA species, in both cases leading to reduced levels of the resultant proteins.

They govern important checkpoints within B cell formation, including lineage commitment, receptor editing, class switch recombination, and the generation of memory cells. Derangement of NCrna functionality or expression abolishes these operations and results in the onset of PIDs.

This review integrates current understanding of ncRNA-regulated control of B cell maturation, delineates known correlations between ncRNA dysregulation and immunodeficiency diseases, and discusses the therapeutic potential and diagnostic applications of ncRNAs. Clarification of these regulatory processes may open new personalized approaches to the diagnosis and treatment of B cell-related immunodeficiencies.

Second day: April 25th

Saina Adiban Afkham

Tehran: 15:50-15:55

IAUTM, Tehran, Iran

Beyond the Genome: Quantum AI-Powered Immunomics—Pioneering the Frontiers of Personalized Immunity and Predictive Medicine in the Era of Synthetic Biology

In the rapidly evolving landscape of biomedical research, the convergence of genomics, artificial intelligence (AI), quantum computing, and immunology is poised to revolutionize our understanding and management of human health. This interdisciplinary approach, which we term "Quantum AI-Powered Immunomics," promises to unlock unprecedented insights into the intricate dynamics of the immune system, enabling the development of personalized, predictive, and preventive medicine strategies. At the heart of this innovation lies the integration of quantum computing with AI-driven genomics. Quantum computing's unparalleled processing capabilities allow for the analysis of vast genomic datasets at speeds previously unimaginable, while AI algorithms can identify complex patterns and correlations that underpin immune responses. This synergy empowers researchers to decode the genetic blueprint of immunity, revealing novel targets for therapeutic intervention and vaccine development. The integration of synthetic biology further enhances this framework by enabling the design and engineering of biological systems that can modulate immune responses with precision. This could lead to breakthroughs in immunotherapy, where tailored treatments can be crafted to bolster defenses against infectious diseases or suppress autoimmune disorders. This research aims to harness these cutting-edge technologies to create a holistic model of immune function. By leveraging quantum AI to analyze genomic, transcriptomic, and proteomic data, we seek to predict individual immune profiles and forecast disease susceptibility. This predictive capability will allow for early intervention strategies, potentially preventing the onset of immune-related disorders. Moreover, the application of quantum AI in immunomics will facilitate the discovery of novel biomarkers and therapeutic targets. This could accelerate the development of personalized vaccines and immunotherapies, revolutionizing the treatment of complex diseases such as cancer and autoimmune conditions. In conclusion, the fusion of quantum computing, AI, genomics, and immunology represents a quantum leap in biomedical research. By pioneering this new frontier, we envision a future where medicine is not only personalized but also predictive and preventive, ushering in an era of unparalleled health outcomes and quality of life for individuals worldwide. This innovative approach holds the potential to redefine the boundaries of human health and disease management, setting the stage for a brighter, healthier future.

Second day: April 25th

Mohammad Javad Yousefi

Tehran: 15:55-16:00

Student Research Committee, Babol University of Medical Sciences, Babol, Iran.

Inflammation-Related microRNA Alterations in Epilepsy: A Systematic Review of Human and Animal Studies

Background: Epilepsy is a neurological disorder affecting approximately 50 million individuals worldwide. Recent evidence highlighted inflammation as an important mechanism in the pathogenesis of epilepsy. microRNAs involved in the pathogenesis of epilepsy, especially through modulating oxidative stress, apoptosis, and inflammation.

Method: This systematic review was performed by collecting and summarizing the data available in the literature about the effect of inflammatory miRNAs in the pathophysiology of epilepsy, via research studies in humans and animal models. We conducted an extensive search through Web of Science (WoS), Scopus, and PubMed databases searched for and screened for relevant studies. Importantly, we only included human and animal studies which included experimental validation of the investigated microRNA. Studies were screened for potential biases using NoS tool for human studies and SYRCLE tool for animal studies.

Result: The current analysis included 21 human and 44 animal reports. Experimental models of the epilepsy induction were predominantly conducted with pilocarpine and kainic acid (KA). In the included human and animal studies reviewed here, 3 miRNAs, in particular, were commonly upregulated in MTLE and TLE: miR-146a, miR-155, and miR-132. MiR-221, miR-222, and miR-29a were downregulated in AD, suggesting their potential role in attenuated neuroinflammation. Differential expression patterns between samples (brain vs. blood) were mapped, uncovering tissue-specific regulatory mechanisms. Inflammatory miRNAs negatively control critical signaling pathways such as TLR4/NF-κB, PI3K/Akt, and IL-1β-mediated neuroinflammation.

Conclusion: These findings underscore the potential of inflammatory miRNAs as both a diagnostic biomarker and a therapeutic target of epilepsies.

Second day: April 25th

Reza Salyanchi

Tehran: 16:00-16:05

Shahid Beheshti University of Medical Sciences Tehran-Iran

Nobel Prize Winners in Immunology

The Nobel Prize in Physiology or Medicine was first awarded in 1901, marking the fifth anniversary of Alfred Nobel. It is one of the highest honors in science. It is awarded annually to individuals whose discoveries have profoundly expanded our understanding of life and disease. Throughout its history, many Nobel Prizes have recognized groundbreaking work in immunology—a field crucial for protecting organisms against disease, maintaining internal balance, and shaping the future of medicine. This abstract presents a chronological narrative of Nobel-recognized immunological breakthroughs and their long-lasting influence, especially on immune function.

The journey began with Emil von Behring (1901), who was awarded for his work on serum therapy, particularly its application against diphtheria, which laid the foundation for immunology and established passive immunization. In 1908, Ilya Mechnikov and Paul Ehrlich were jointly awarded for their contributions to understanding the immune system, including phagocytosis and antibody formation, establishing innate and adaptive branches. Jules Bordet (1919) extended this with the complement system. He found that blood serum contains two factors responsible for killing bacteria: Antibodies and complement.

Karl Landsteiner (1930) work on blood groups. He Discovered that incompatible blood transfusions could cause fatal reactions. Frank Macfarlane Burnet and Peter Medawar (1960) introduced acquired immunological tolerance, enhancing understanding of immune response and organ transplantation. Frank proposed that the immune system is made up of individual lymphocyte clones, each recognizing a specific antigen. Antigen exposure activates specific clones, leading to antibody production.

Medawar's Work on Skin Grafts & Transplantation conducted experiments on skin graft rejection, discovering immune-mediated rejection mechanisms. The 1972 prize was to Gerald Edelman and Rodney Porter for antibody structure. In 1984, Niels Jerne, Georges Köhler, and César Milstein developed monoclonal antibodies and explained how antibodies regulate immune responses. Susumu Tonegawa (1987) uncovered V(D)J recombination and was awarded for discovering the genetic mechanism that produces antibody diversity, explaining how the immune system adapts to recognize a vast array of antigens. Peter Doherty and Rolf Zinkernagel (1996), jointly discovered how T cells recognize virus-infected cells only when presented by MHC molecules, a fundamental breakthrough in understanding cell-mediated immunity. In 2011, Bruce Beutler and Jules Hoffmann clarified pathogen recognition through Toll-like receptors, while Ralph Steinman's discovery of dendritic cells redefined immune activation pathways. James Allison and Tasuku Honjo (2018) revolutionized cancer treatment through checkpoint inhibitors (CTLA-4 and PD-1), showing immune activation can be fine-tuned. Katalin Karikó and Drew Weissman (2023) pioneered modified mRNA technology, crucial in vaccine development and future therapies for immune disorders. Most recently, Victor Ambros and Gary Ruvkun have contributed to understanding microRNA's regulatory roles, unveiling a new dimension of immune gene control.

Discussion: These Nobel-awarded discoveries reflect the evolving depth of immunology, from basic defense mechanisms to complex regulation and therapy. Together, they form the backbone of how we understand, diagnose, and treat disease today—offering a rich legacy and pointing toward new frontiers.

Second day: April 25th

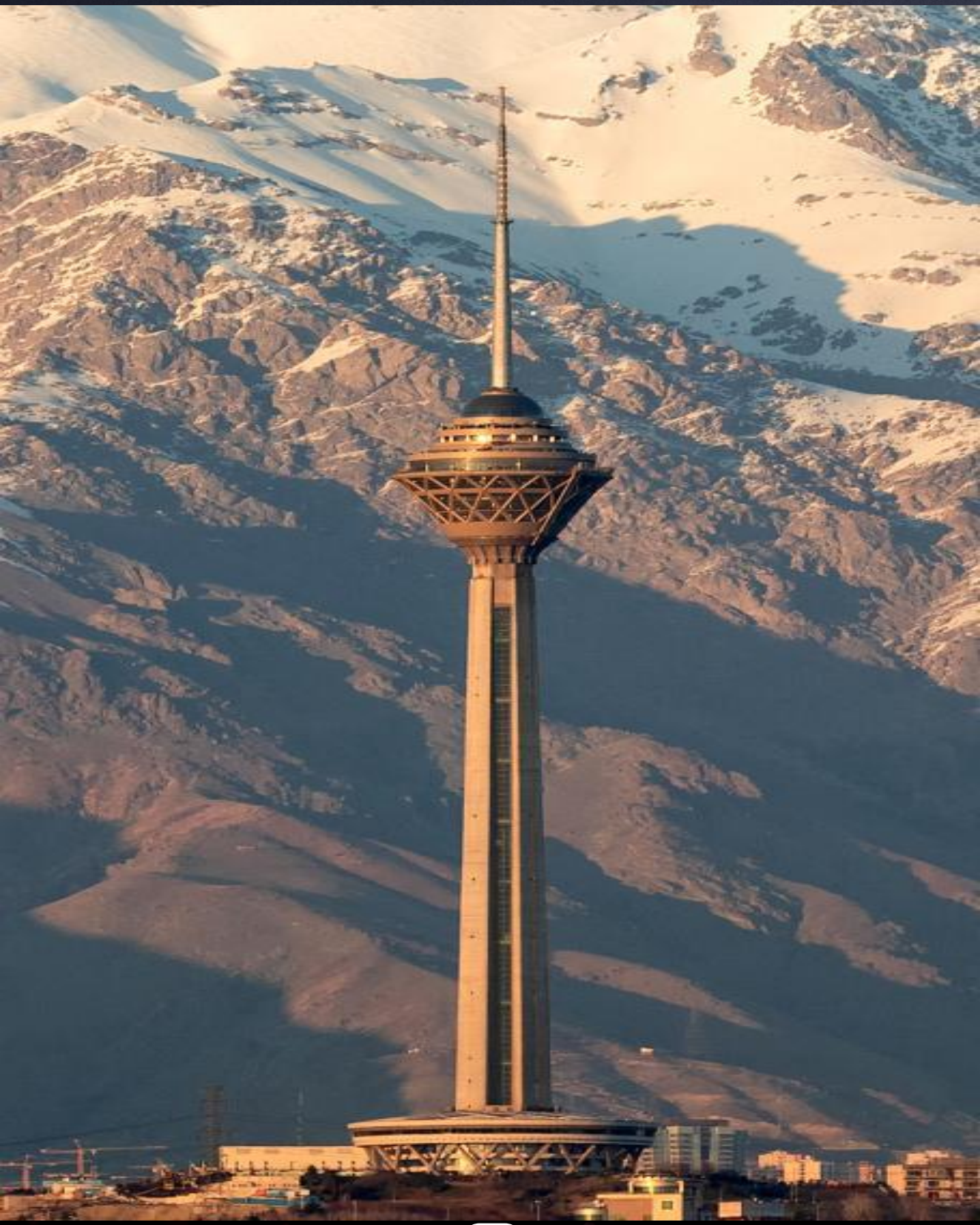
Saba Baghizadeh

Tehran: 16:05-16:10

Islamic Azad University, Tehran Medical Branch

Clock Genes, Melatonin, and the Circadian Clock in the Pathogenesis of Psychiatric Disorders

The circadian rhythm is an internal clock that regulates various physiological processes, along with mood, behavior, and sleep patterns. A disruption in the circadian rhythm could be a symptom or triggering factor of many psychiatric disorders, namely major depression and bipolar disorder. Circadian rhythm is coordinated by the master clock located in the suprachiasmatic nucleus (SCN), which receives light and other external clues. The molecular mechanisms of this system consist of various clock genes with a cyclic expression pattern, forming a distinct negative feedback loop. The expression of many neurotransmitters such as serotonin, norepinephrine, and dopamine are influenced by this molecular clock. Melatonin, the darkness hormone secreted from the pineal gland, affects patterns of sleep-wake and change of intrinsic rhythm to adapt to the environment. Changes in the melatonin pathways and clock gene expression could have potential impacts on the severity of mood disorders. This article reviews the significance of the circadian clock in psychiatric disorders, focusing on the molecular mechanisms and potential therapeutic targets.



شانزدهمین

کنفرانس بین المللی

بیماری های نقص ایمنی اولیه

(به‌صورت حضوری و مجازی - هیبرید)

چهارم و پنجم اردیبهشت

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