

MEETING PROCEEDINGS

Inflammation

A report on 'Scientific Meet on Inflammation' held at ChanRe diagnostic laboratory, Bengaluru, on 22nd and 23rd August 2015

Inflammation, the immune response of the body to harmful external or internal stimuli, involves immune cells, blood vessels, and molecular mediators. This complex biological process is essential to confer self-protection, and to heal injuries and infection. If the body is not able to resolve the initial inciting factor, it progresses to persistent inflammation. The short-term initial response, which presents with classical signs such as pain, heat, redness, swelling, and transient loss of function, is known as acute response. If the inflammation does not subside, it becomes chronic. Viral or microbial infection, autoimmune reaction, environmental antigen or persistent activation of inflammatory molecules can produce chronic inflammation.

Dysregulation of immune system due to chronic inflammation will eventually cause diseases. Although several human diseases are inflammatory in nature, the role of inflammation in disease pathogenesis is not clearly explored. Research in this area requires a multi-dimensional approach encompassing various fields of medical sciences, basic sciences, and clinical informatics. In this regard, recently, a two-day meet on 'Inflammation' was organized in Bengaluru by ChanRe Rheumatology and immunology Center and Research. The key objective of this scientific meeting is to unify the thoughts and opinions of clinicians and basic scientists, working in the field of Inflammation from various parts of India, and to initiate a cross-talk on the role of inflammation in non-communicable diseases. The meet offered a platform for an inter-disciplinary approach to strengthen research on inflammation in the country.

The meeting started with a warm welcome note by the convener, Dr. Chandrashekar S (ChanRe RICR, Bengaluru), followed by a brief introductory speech on inflammation by Dr. V S Negi (Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry). The first talk of the scientific meet was delivered by Dr. Chandrashekar S (ChanRe RICR, Bengaluru) on

'Dichotomy of quantifying and managing the inflammation in autoimmune disease'. He underscored the need to quantify, qualify, and assess the impact of inflammation in a given clinical scenarios and identify inflammatory markers from the regulatory proteins of autoimmune diseases. He also discussed the dilemma faced by clinicians in deciding how much to control and how to control the inflammatory process in autoimmune disease management. He urged the researchers to work on constructing autoimmune disease models. The lecture by Dr. M Balasubramanyam (Madras Diabetes Research Foundation, Chennai) was on the topic 'Inflammaging and Meta-inflammation in type 2 diabetes'. He explained the various molecular mechanisms involved in the inflammatory processes linked to diabetes. He also indicated the increased incidence of morbidity and mortality in diabetes patients, in spite of treatment. He also discussed the significance of novel markers like neutrophil to lymphocyte ratio, lipopolysaccharides, diabetes-associated molecular patterns, epigenetic mechanisms as in miR-146a expression levels, and structural changes in DNA such as telomere shortening. He highlighted the importance of algorithms for using multiple biomarkers in the field of diagnosis and management of diabetes.

Based on the experimental work on 'Role of inflammatory cytokines in disrupting the blood-brain barrier (BBB) function during neuronal autoimmunity', Dr. Girdhari Lal (National Centre for Cell Science, Pune) explained how IFN- γ promotes the migration of inflammatory CD4 T cells by disrupting the tight-junction molecules at BBB leading to neuronal autoimmunity. Dr. Negi (Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry) presented his work on 'Cytokine based T cell profiling in RA'. He has reported altered transcription factors and cytokines as the underlying cause of immune dysregulation in RA. He emphasized that better management of RA is possible if novel markers are identified for early diagnosis and to stratify disease subsets for monitoring disease activity and treatment response.

Dr. Padma shastry (National Centre for Cell Science, Pune) discussed her work on 'Oncostatin-M mediated-STAT-3 signaling regulates mesenchymal and proneural genes in gliomas- New lessons from old chapters'. Terming the microenvironment as the 'fuel providers' for cancer cells, she explained the link between inflammation, cancer and microenvironment. She has highlighted the association of Oncostatin-M receptor upregulation with mesenchymal features in glioma cells, which could serve as a target for therapeutic intervention.

Dr. Chandramani Pathak (Indian Institute of Advanced Research, Gandhinagar) spoke on 'Involvement of fas-associated death domain (FADD) in regulation of apoptosis and inflammatory signaling in cancer cells'. His talk focused on the closely-related cellular processes of apoptosis and inflammation and the modulatory role of FADD in cancer prevention and therapy. Dr. Padmamalini Mahendradas (Narayana Nethralaya, Bengaluru) discussed her work on 'Correlation between assessment of flare using clinical grading and laser flare meter in Uveitis'. She demonstrated the utility of laser flaremeter in grading the inflammatory flares in various uveitis entities in comparison to clinical grading. The lecture by Dr. Jyotirmay Biswas (Sankara Nethralaya, Chennai) was on 'Immunosuppressive agents in uveitis and scleritis-my experience'. Recollecting his 28yrs of clinical experience, he delineated the use of antimetabolites, alkylating agents, and T-cell inhibitors in immunosuppressant therapy. He also discussed the use of different treatment lines for various forms of uveitis and scleritis. He cautioned about the drug-related adverse effects, the need to follow-up the patients on treatment every two weeks, and to discontinue the medication in case of side effects.

Dr. Bhavana Sosale (Diacon Hospital, Bengaluru) discussed her ongoing research on 'Vitamin D augmentation in treatment of diabetes'.

On the 2nd of the meet, Dr. Chandrashekara S (ChanRe RICR, Bengaluru) and Dr. Kamalanathan A S (Vellore Institute of Technology, Vellore) discussed potential projects in the field of autoimmune diseases.

The eminent researchers participated as observers for the meet include: Dr. Renuka P (ChanRe Diagnostic Laboratory, Bengaluru), Dr. Prasanna Kumar K M (Center for Diabetes and Endocrine care, Bengaluru), Dr. Sridaran D (ChanRe RICR, Bengaluru), Dr. Dharmanand B G (Sakra Hospital, Bengaluru) and Dr. Krishnan V (Vellore Institute of Technology, Vellore) .

Based on the 2-day lectures on inflammation, the researchers have put forth the following specific recommendations:

- An integrated approach is essential to work uniformly on qualifying and controlling inflammation by including the underlying complexities of molecular mechanisms in various clinical conditions.
- Developing a panel of biomarkers with population standardized values and algorithms, by bringing in all the parameters, is vital for the accurate diagnosis and monitoring of therapy.
- A forum of clinical and basic scientists and a biomarker consortium at the national level should be formed to collaborate, share the expertise, and to expand the work on different molecular signatures of inflammatory conditions.