UEG Week Vienna 2014 cutting edge symposium: Today's Science, Tomorrow's Medicine session features the immune system – a driving force in digestive health and disease

United European Gastroenterology Journal
2014, Vol. 2(2) 149–150
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DOI: 10.1177/2050640614528146
ueg.sagepub.com

One of the major goals of UEG Week which brings together clinicians but increasingly also basic scientists is to translate the most exciting findings from basic science into clinical practice. For this purpose a lecture series entitled “Today's Science Tomorrow's Medicine” has been introduced recently to support this task. This year's topic of UEG Week Vienna is focussing on the role of the immune system as a key and driving force in health and disease. For this reason world class scientists will present recent findings and discuss their translational potential.

A first series of lectures is focussing on the topic “*The liver as central regulator of inflammation*”. Here, several presentations will concentrate on issues how the gut may determine immunity in the liver and which role the liver plays in systemic tolerance. It is increasingly recognized that similar immune processes are taking place in diseases such as inflammatory bowel diseases and accompanied liver diseases such as primary sclerosing cholangitis (PSC). Whereas treatments for IBD have dramatically improved in the last years e.g. also recently targeting key adhesion molecules such as $\alpha 4\beta 7$ integrins, treatments for PSC are still in its infancy. Experimental data from the last years especially by David Adams group have demonstrated that this key adhesion molecule is highly expressed also in livers of PSC suggesting that targeting this molecule might reflect a promising strategy in PSC in the future. Respective clinical trials are eagerly awaited. Other topics of this session include how immune responses against certain hepatitis viruses are directed which may become particular important in the near future to individualize treatment with the novel direct acting antivirals against hepatitis C. Moreover, the emerging topic of heterologous immunity will be discussed which could explain in part the interindividual variability in the outcome of infections.

A second series of lectures deals with “*Inflammation and relevance in metabolic disorders*”. Evidence from the last decade has highlighted that diseases such as metabolic syndrome, non-alcoholic fatty liver diseases (NAFLD) and type 2 diabetes are associated with so called low-grade inflammation. The origin of chronic

inflammatory processes observed in metabolic disorders is still unclear. The recent obesity epidemic is a driving force for the worldwide increasing prevalence of type 2 diabetes as more than 80% of T2D patients are overweight. Obesity-induced insulin resistance is the most relevant underlying pathophysiologic factor. As insulin resistance and metabolic inflammation are frequently observed in parallel, research in the last years has tried to understand these two phenomena. It is widely accepted that the etiology of insulin resistance is complex and involves very diverse pathways. Inflammatory pathways are critically involved in the evolution of insulin resistance. Overnutrition and certain diets could represent major starting points as they might modify the gut microbiota, lead to changes in lipid metabolism, hepatic steatosis, and finally systemic inflammation. Lectures in this session deal specifically with the role of adipose tissue inflammation and focus on the liver and its cross-talk with various extra-hepatic tissues such as the adipose tissue in disorders accompanied by metabolic inflammation. This is an exciting area as it has evolved that the gastrointestinal tract, adipose tissue and the liver communicate together in many metabolic diseases and the microbiota might play a key role.

A third topic of this series has a focus on “*Diet, immunity and systemic disease*”. Whereas recent evidence using state-of-the art sequencing technologies have demonstrated that in many metabolic diseases a so called “gut signature” with respect to dysbiosis might exist, recent exciting studies have shown that diet might reflect a key modulatory factor regulating and affecting the gut's microbiota. Various diets might have very diverse effects on the gut microbiota exerting either pro- or anti-inflammatory effects. It has been recently demonstrated that diets dominated by cruciferous vegetables act anti-inflammatory by activating aryl hydrocarbon receptors thereby regulating expression of key intestinal cytokines such as interleukin-22 and influencing the microbial composition. In contrast, diets enriched in phosphatidylcholine result in the generation of pro-inflammatory mediators such as trimethylamine and derivatives which as demonstrated

also by clinical trials favor inflammation and atherosclerosis. This session is composed of four state-of-the-art lectures featuring effects of various diets on inflammatory cascades highlighting the large potential of dietary interventions in diseases far beyond the gastrointestinal tract.

Another series of lecture deals with “*New insights in the pathophysiology of inflammatory bowel diseases*”. These diseases have been considered as prototypic gastrointestinal diseases where immunity, microbiota and diet play a fundamental role. An introductory lecture will present a summary and recent evidence on the role of various genetic factors in IBD. Recent metagenomic studies have dramatically increased our understanding on the composition of the microbiota in IBD, as it is currently believed that an aberrant immune response towards commensals plays a key role in IBD. Pathophysiology and recent insights have also suggested that processes such as ER stress and autophagy are key early events in IBD pathogenesis as nicely demonstrated by research published recently by Kasefs and Blumberg’s lab convincingly showing that ER stress and autophagy defects in combination cause intestinal changes in murines which resemble early Crohn’s disease. Their studies found out that ER stress, autophagy induction and spontaneous ileitis evolve from Paneth-cell specific deletion of the key ER stress driving transcription factor, X-box binding protein 1.

Overall this year’s TSTM series will be of major interest not only to specialised scientists but also to many clinicians as many talks may have important

translational and clinical implications. We are convinced that attending these lectures will even further stimulate academic exchange between basic scientists and clinicians.

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Highlight these dates for UEG Week Vienna 2014 in your calendar:

- April 22, 2014: Deadline for abstract and video case submission
- May 15, 2014: Deadline for early bird registration fee
- July 4, 2014: Deadline for late breaking abstract submission
- September 10, 2014: Deadline for late registration fee
- October 18–22, 2014: UEG Week 2014 in Vienna

Find out more about the UEG Week Vienna 2014 scientific programme and abstract submission at www.ueg.eu/week