

9th World Congress and Expo on

IMMUNOLOGY, IMMUNITY INFLAMMATION & IMMUNOTHERAPIES

November 02-03, 2017 | Atlanta, USA

Links between innate chemokines and alarmins in inflammatory and cardiovascular disease

Jürgen Bernhagen

Ludwig-Maximilians-University, Germany

Inflammatory processes such as those promoting atherosclerotic lesion formation are pivotely driven by components of the innate and adaptive immune axis. Chemokines and their receptors are a particularly prominent part of the innate immune arm. While the role of classical chemokines, i.e. belonging to the CC or CXC families, is increasingly well understood, an emerging family of chemokine-like inflammatory mediators termed 'innate chemokines', CLF chemokines or microchemokines, has been identified. These mediators structurally and functionally overlaps with protein component of the mediator class of alarmins. At the molecular level, innate chemokines and alarmins have yet to be comprehensively characterized regarding their mechanisms, receptor and signaling pathways, and role in disease. For example, innate chemokines modulate inflammatory reactions in the atherogenic arterial wall and numerous other inflamed tissues, but the precise receptor signaling mechanisms are still only poorly understood. What is known is that many innate chemokines share functional homology with classical chemokines and signal through classical chemokine receptors, whereas they do not exhibit conserved structural features such as N-terminal tandem cysteine residues or the chemokine fold. Thus, important receptor binding motifs yet have to be characterized. This lecture will give an overview of the mechanisms underlying "molecular hijacking" of classical chemokine receptors by innate chemokines and alarmins, featuring their pathophysiological role. Examples will encompass high mobility group binding protein-1 (HMGB1), macrophage migration inhibitory factor (MIF), MIF-2/D-DT, IL-33, and certain β -defensins. Receptor usage, binding domains, signaling, innate immune cell regulation, and involvement in various inflammatory conditions, including atherosclerosis will be discussed. The lecture will outline strategies to target such mediators in disease either in conjunction or explicit exclusion of the co-targeting of classical chemokines. Finally, a cross-kingdom analysis will be shared offering more general understanding of some of these mediators.

juergen.bernhagen@med.uni-muenchen.de