C-Reactive Protein: More than a Biomarker

In this issue of the journal, Kinoshita et al. [1] present a study where they investigated immunomodulatory activities of C-reactive protein (CRP), an acute-phase protein that is mainly synthesized in the liver upon stimulation by IL-6. It belongs to the pentraxin family of proteins and binds to lysophosphatidylcholine on the surface of dead cells and bacteria, an interaction that activates the complement system and promotes subsequent phagocytosis [2, 3]. Severe inflammation and sepsis are characterized by a complex series of events that affect individuals to various extents, for example depending on the causative agent and underlying disease [4–7]. Long CRP has been used as a sensitive serum biomarker to follow the course of diseases characterized by inflammation. Also, in recent years, it has been discovered that low-grade inflammation increases the risk of cardiovascular disease [8]. In their study, Kinoshita et al. [1] investigated the efficacy of posttreatment with synthetic CRP using a murine model of sepsis. While pretreatment is often used in these models, treatment after the onset of disease better reflects the clinical situation. They found that posttreatment with synthetic CRP increased the survival. Moreover, the treatment reduced the bacterial load and increased the phagolytic activity of bacteria in Kupffer cells. However, monocyte-derived liver macrophages were involved to a much lesser or no extent since depletion of

Kupffer cells inhibited the beneficial effects of synthetic CRP. The findings are highly interesting and may pave the way for future therapeutic use of synthetic CRP in severe infections and sepsis.

Another important area of disease is bacterial infections of the urinary bladder, i.e., acute cystitis, which are common, especially among women. In these infections, innate immunity plays an important role and the infection often resolves without treatment [9]. However, cystitis may occur as a consequence of treatment with cyclophosphamide and this condition is associated with neurogenic inflammation and neuropathic bladder pain [10]. In this issue, Jiang et al. [11] hypothesize that neuronal dual leucine zipper kinase (DLK) is involved in the regulation of inflammation and nociceptive stimulation during cystitis. Cystitis was induced by cyclophosphamide administration in mice. Both pharmacological inhibition of DLK in wild-type mice and the use of mice deficient in neuronal DLK confirmed a key role for this enzyme. Thus, DLK is a potential target for the treatment of neuropathic pain and bladder pathology in chemically induced cystitis.

With this, we hope that the readership of the journal will find the compilation of articles appearing in this issue of the journal interesting.

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