



Human platelets—danger sensing and inflammation: Helpful or harmful?

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Abstract:

Platelets are non-nucleated cellular elements that play a role in haemostasis, innate immunity, and inflammation. Platelet-linked inflammation seems essentially related to the capacity of platelets to secrete cytokines, chemokines, and related molecules upon stimulation or state change. Moreover, platelets display receptors for numerous types of immune effectors and regulators. This secretory function confers to platelets a regulatory role in immunity. Platelets also exhibit non-self infectious danger detection molecules on their surfaces, particularly from the Toll-like receptor (TLR) family; through TLR expression, platelets can bind infectious agents and also deliver different signals for the secretion of cytokines and chemokines. Platelets may therefore be regarded as a neglected component of immune cell regulators, and they contribute to some interesting aspects in bridging innate and adaptive immunity. Further, platelets may sense several types of infectious pathogens and limit microbial colonization by sequestering these pathogens and releasing immunomodulatory factors. This review aims, firstly, to revisit some functions that platelets exert directly in anti-infection immunity; it presents experimentally driven arguments in favour of a role for the TLR in regulating certain immune activities. This paper then aims at discussing the role of platelet-originating cytokines in transfusion and at deciphering the circumstances where they are harmful for the patient; nonetheless, besides the harmful side of proinflammatory products released by platelets, they may be some benefits, that are also presented.

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