

Phagocytes as central players in the defence against invasive fungal infection.

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Abstract

Fungal pathogens cause severe and life-threatening infections worldwide. The majority of invasive infections occurs in immunocompromised patients and is based on acquired as well as congenital defects of innate and adaptive immune responses. In many cases, these defects affect phagocyte functions. Consequently, professional phagocytes - mainly monocytes, macrophages, dendritic cells and polymorphonuclear neutrophilic granulocytes - have been shown to act as central players in initiating and modulating antifungal immune responses as well as elimination of fungal pathogens. In this review we will summarize our current understanding on the role of these professional phagocytes in invasive fungal infection to emphasize two important aspects. (i) Analyses on the interaction between fungi and phagocytes have contributed to significant new insights into phagocyte biology. Important examples for this include the identification of pattern recognition receptors for β -glucan, a major cell wall component of many fungal pathogens, as well as the identification of genetic polymorphisms that determine individual host responses towards invading fungi. (ii) At the same time it was shown that fungal pathogens have evolved sophisticated mechanisms to counteract the attack of professional phagocytes. These

mechanisms range from complete mechanical destruction of phagocytes to exquisite adaptation of some fungi to the hostile intracellular environment, enabling them to grow and replicate inside professional phagocytes.

Involved units

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