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表皮機能の新展開

表皮におけるランゲルハンス細胞

多田弥生

Langerhans Cells; Antigen Presenting Cells Located in the Epidermis

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Abstract

Langerhans cells (LC) are immature antigen presenting cells located in the epidermis. LC express characteristic 'tennis-racket' shaped, cytoplasmic granules called "Birbeck granule." Recent studies have shown that langerin is a potent inducer of this Birbeck granule and since langerin is rather specifically expressed in LC, inducible or constitutive ablation using Langerin-DTR system became possible with mice. LC capture self-antigen and/or pathogen-derived antigen in the skin and migrate into the peripheral lymph node where they present these antigens to naïve T cells. Being affected by the micro-enviroment and antigen presenting LC, naïve T cells differentiate into effector T cells, which evoke skin immune responses. Until recently, LC were thought to play major role in skin immunity, since it is the only professional antigen presenting cells in the epidermis, where various stimulation easily occur and most easily accessed by pathogens and antigens. However, using LC ablation mouse models, it is becoming clear that LC is not necessarily important for inducing skin acquired immunity and rather dermal dendritic cells are important. Furthermore, accumulating data suggest that LC might be rather pivotal in inducing torelance to self antigens. As with its role in innate immunity, LC shows rather low responses to pathogen-associated molecular patterns (PAMPs) compared to other dendritic cells. However, langerin expressed on the cell surface of LC was recently shown to be an important molecule for recognizing pathogens such as mycobacterium and HIV. As for HIV, langerin not only recognizes the pathogen but also internalize it into Birbeck granules and HIV is degraded there. Thus, langerin turned out to be a natural barrier to HIV-1 infection. This article reviews these new findings regarding LC.

Key words: Langerhans cells, Langerin, keratinocytes.