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COMMENTARY

Dapsone and NETs

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In this issue (Volume 2, Issue 1), Mikita reported an interesting case with discoid lupus erythematosus who showed transient effectiveness of dapsone for skin lesions[1]. Dapsone, also known as diaminodiphenyl sulfone (DDS) is a synthetic sulfone antimicrobials and has been used for Hansen disease as a specific medicine. In addition, dapsone is used for several dermatological disorders such as cutaneous vasculitis, systemic vasculopathy, autoimmune bullous diseases and prurigo pigmentosum[2], in which histological neutrophil infiltration is observed in the early stage or during the course. Dapsone is thought to be central to the suppression of neutrophil function by neutrophil migration or inhibition of myeloperoxidase (MPO) and exerts the anti-inflammatory effects by interfering with the polymorphonuclear leukocyte (PMN)-dependent production of oxygen intermediates, thus conferring protection from auto-oxidative tissue injury[3]. On the other hand, neutrophil extracellular traps (NETs) have attracted attention in recent years as involvement in autoimmune diseases of neutrophils that are the immune system's first-line of defense against infection. NETs are networks of extracellular fibers, primarily composed of DNA from activated neutrophils, which bind pathogens[4]. NETs release a network structure consisting of nuclear DNA and granular proteins (MPO *etc*.) outside the cell to trap pathogenic microorganisms and sterilize them. Overexpression of NETs including self DNA and histone is presumed to be involved in the onset of autoimmune diseases[5]. In addition, it was reported that NETs rich in oxidized mitochondrial DNA promoted the production of type I IFN and was involved in the pathology of SLE[5]. Although the influence of dapson on NETs is unknown, NETs will provide us better understanding for considering the mechanism between dapsone and its therapeutic effect through innate immunity.

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