Identification of a mononuclear phagocyte as the major source of IL-23 production in chronic plaque psoriatic skin

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Introduction: In psoriasis lesional skin, mononuclear phagocytes (MNPs) are believed to be the main source of IL-23 – a key cytokine responsible for the expansion and maintenance of pathogenic IL-17 producing T cells. In normal skin, MNPs include macrophages (CD163+Macrophages), monocyte-like cells (CD14+ cells), various dendritic cell types (CD1a-/dimCD1c-/+DCs), and Langerhans cells (CD1abrightCD207bright LCs). How these MNP subpopulations are changed in psoriatic skin, and which specific subsets are responsible for IL-23 production remain poorly understood.
Materials: To address these questions, we immunophenotypically characterized CD11c+MHClassII+ MNPs in lesional and matched non-lesional skin from psoriasis patients (n=20).
Results: A profound increase in numbers of IL-23-producing MNPs in lesional skin compared to non-lesional skin was observed. Among CD14- cells, the frequencies of CD1a-CD1c-/dim DCs were augmented in psoriatic plaques relative to non-inflamed skin, while the proportions of CD1a-/dimCD1c+ DCs (cDC2) and LCs were significantly decreased. None of these CD14- MNP subsets significantly contributed to IL-23 production in lesional skin. Instead, the predominant source of IL-23-producing MNPs in psoriatic plaques was comprised of a novel population defined as CD1a-CD1c-CD14+CD64brightCD163- cells.
Conclusion: Further cellular and molecular characterization of these IL-23-producing MNPs from lesional psoriasis skin is ongoing and might contribute to furthering our understanding of IL-23 pathway biology and its involvement in the immunopathogenesis of psoriasis and other inflammatory autoimmune diseases.

Keywords : Psoriasis, inflammatory monocytes, IL-23
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