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Immune characteristics of scalp and skin psoriasis

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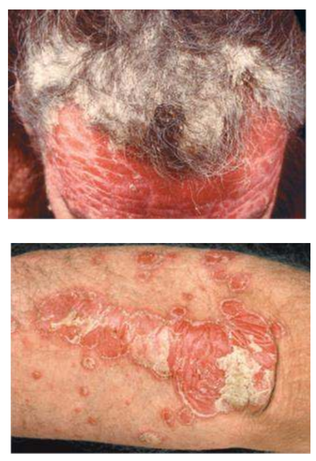
Introduction

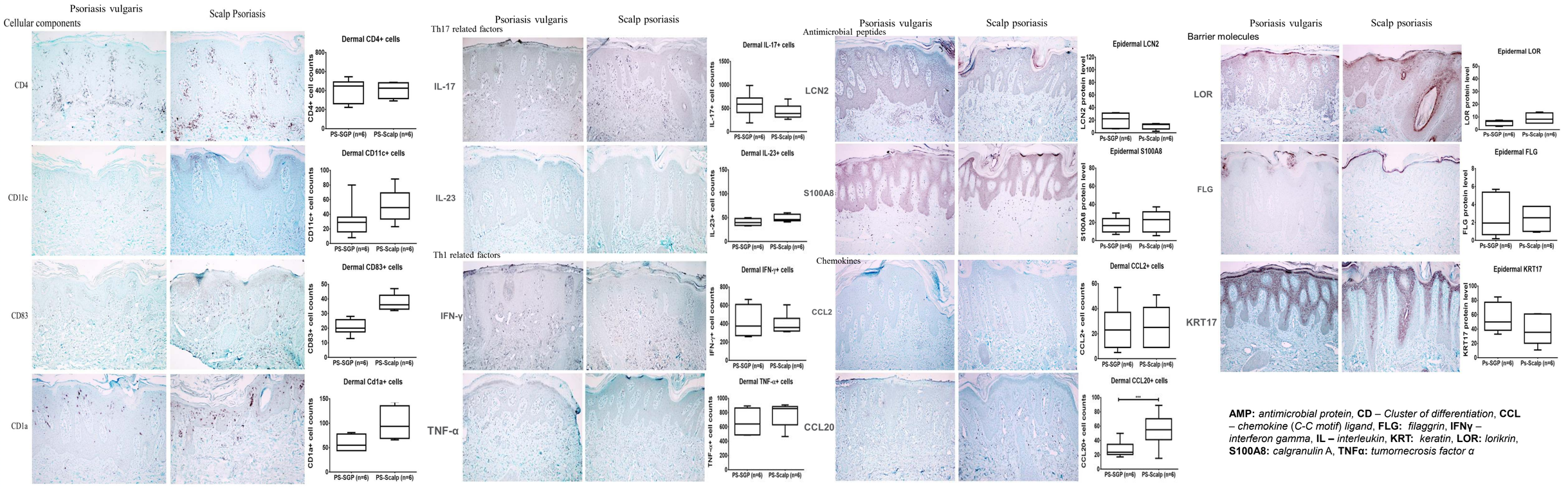
- Psoriasis is a chronic inflammatory, immune mediated skin disease, which can involve all skin regions. The most frequent forms among them are chronic plaque-type psoriasis on trunk or extremities (psoriasis vulgaris, on sebaceous gland poor (SGP) skin) and scalp psoriasis, which affects sebaceous gland rich (SGR) skin regions. Distinct immune and barrier characteristics were identified in SGR compared to SGP skin (Béke et al, 2018), especially regarding the presence of Th17 cells, which are also important in the pathogenesis of psoriasis.
- We aimed to investigate whether the immune mediated skin inflammation (immune cell and immune mediator composition) is different in psoriasis vulgaris (representing SGP skin) compared to scalp psoriasis (representing SGR skin). These differences may lead to specific treatment which is more adjusted to the immunological characteristics of a certain area.



Aims, Patients and Methods

Our aim was to compare the immune cell and immune mediator composition of scalp psoriasis and psoriasis vulgaris. Skin biopsies were obtained from psoriatic plaques of scalp regions and extremities of psoriatic patients, and immune cells, which are important in the development and maintenance of psoriatic inflammation, furthermore the expression of different humoral immune mediators (cytokines, chemokines), epidermal barrier proteins and antimicrobial peptides were investigated by immunohistochemistry (IHC). Expression of these proteins were also investigated on mRNA level by qPCR.

Results



AMP: *antimicrobial protein*, **CD** – *Cluster of differentiation*, **CCL** – *chemokine* (*C-C motif*) *ligand*, **FLG:** *filaggrin*, **IFNγ** – *interferon gamma*, **IL –** *interleukin*, **KRT:** *keratin*, **LOR:** *lorikrin*, **S100A8:** *calgranulin* A, **TNFα:** *tumornecrosis factor α*

According to our immunohistochemical investigations there is no significant difference either in the number of immune cells, or in the expression of different AMPs, cytokines, chemokines epidermal barrier proteins between the two psoriatic groups. These results were also confirmed in mRNA level by qPCR (data not shown).

Summary and conclusion

According to our results psoriatic plaques developing on sebaceous gland rich or sebaceous gland poor skin are not differ in the amount of infiltrating CD4+ T cells, CD11c+ mDCs and CD1a+ Langerhans cells. In accordance with this, there is also no significant difference in the expression of Th17 related AMPs (S100A7, S100A8, S100A9, LCN2), cytokines (IL17, IL23) and CCL2 chemokine between the two psoriatic groups. The expression level of the epidermal barrier proteins (FLG, KRT17, LOR) were also found to be similar.

Our results suggest, that the process of the immune mechanisms in the psoriatic skin is universal, independent from its localization on sebaceous gland rich or poor skin. Psoriasis - although skin symptoms dominate - is a complex, systemic disease and the classical skin inflammation is independent from the number of local sebaceous glands on the given area. Our results in accordance with the clinical observations, since new systemic treatments influencing the immune-system are effective in both scalp psoriasis and in psoriasis vulgaris. Although the formulation of the local therapy can be different in their treatment, improvement of different active ingredients for both local and systemic treatments is not indicated.

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