The CD40/CD40 ligand system in the skin of subacute cutaneous lupus erythematosus patients

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Subacute cutaneous lupus erythematosus (SCLE) is a widespread, photosensitive, nonscarring, nonindurated form of LE-specific skin disease. The tissue injury of SCLE lesions may result from autoantibody- and complement-mediated cell damage, direct T-cell mediated cytotoxicity, TNF-α-induced apoptosis, and antibody-dependent cell-mediated cytotoxicity. The CD40/CD40 ligand (CD40L) co-stimulatory system belongs to the TNF-TNF receptor superfamily and has been found to be involved in many immune mediated diseases, including SLE. Since no data concerning the expression of CD40 and CD40L in SCLE are available in literature to date, we meant to investigate whether such costimulatory system is expressed in SCLE lesions, as well as in healthy sunprotected skin taken from the same patients.

Six female patients affected by SCLE were studied. Skin biopsies were obtained from lesional and healthy sunprotected skin. Frozen sections were stained immunohistochemically using monoclonal antibodies to CD40 and CD40L. As controls we used five patients affected by discoid LE (DLE) and five affected by dermatomyositis (DM), as well as the normal-appearing skin of five healthy volunteers.

The CD40 was intensely expressed in all SCLE, DLE and DM lesions, and only focally in healthy sunprotected skin specimens. The number of CD40+ cells in SCLE dermis was significantly lower than in DLE, overlapped with that in DM and was significantly higher than in SCLE sunprotected skin. CD40L+ cells infiltrated the SCLE, DLE and DM lesional dermis. CD40L+ cells were significantly more present in SCLE lesional skin than in SCLE healthy sunprotected skin.

In conclusion, we first showed that the CD40/CD40L system may represent an important pathway of induction of SCLE lesions. The expression of such costimulatory system also in healthy sunprotected skin suggests that its abnormal activation is constitutive in SCLE, as already observed in SLE.