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Cutaneous Microcirculation in Psoriasis

A videocapillaroscopic morphofunctional study

G. C. FUGA, W. MARMO, F. ACIERNO, F. BASSETTI, F. LEONETTI, L. M. PAMPANELLI and G. PALERMI

Istituto S. Gallicano IRCCS, Rome, Italy

The capillaroscopic picture of psoriasis has been widely described in literature (1–8). Clinical alterations in the microcirculation of psoriatic plaques have been attributed prognostic significance (9), although the exact nature of the capillary damage remains uncertain (10). The latest capillaroscopic investigations of microcirculation functioning have shown that there is increased blood flow in the capillaries of psoriatic plaques and uninvolved skin, compared with normal skin (11). Ultrastructural examination revealed that the capillary wall takes on venous characteristics beyond the limits of the norm and endothelial volume is greatly increased in psoriatic lesions. Significant differences were also found between values for control subjects and those of both involved and uninvolved psoriatic skin for luminal volume (7–9, 12). Therefore, in this type of dermatitis, microcirculatory damage is characterized by vasodilatation with elements of dystrophy, an incrase in the number of capillaries per square millimetre and increased blood flow in the already dilated capillary loops.

The aim of the present study was to ascertain and evaluate, by means of computerized video-capillaroscopy, a non-invasive method we described at the 6th World Conference on Medical Informatics, Medinfo 89, Singapore, 1989 (13): the possible morphofunctional alterations induced by sensitized stasis test (modified Lunedei's test) in the cutaneous capillaries of psoriatic patients.

A group of 20 patients suffering from plaque-form psoriasis without onychopathy entered in the study (8 men and 12 women, mean age 49 years and PASI rating of more of 18). For control purposes, we utilized a group of 5 non-psoriatic subjects (3 men and 2 women, mean age 45 years). The two groups of subjects underwent a sensitized stasis test which consists in enforcing for 3 min, by a sphygmomanometer applied on an arm, a pressure of 5 Hgmm over the systolic pressure (SP) if this is less than 120 Hgmm, or a pressure of 10 Hgmm higher than SP in the case of SP greater than 120 Hgmm. Following these 3 min of complete cessation of blood flow, we made a reduced compression, for 5 min in any case, of 10 Hgmm in relation to SP. For every patient, capillaroscopic observations were made of a psoriatic plaque on a forearm, of the apparently healthy perilesional skin and of the nail fold of the fingers, before the test, at the end of the highest pressure occlusion, at the end of lowest pressure occlusion and 10, 20 and 30 min after removing the occlusion. Each subject stayed for 30 min in the laboratory before the sensitized stasis test and the capillaroscopic observation began. The study area was covered with oil of cedar wood to clarify the microscopic field.

At the end of the test, the control group presented very few haemorrhages and a moderate dilation of microvessels which disappeared after 20 min.

The uninvolved skin of psoriatic patients has shown an increase in the calibre of capillaries and some haemorrhages beaker-like observable after more 30 min.

The microvessels of uninvolved nail fold presented a slight dilatation with very few heamorrhages.

On the psoriatic plaque, we observed the greatest increase in vasodilatation with tortuosities, volutes and numerous haemorrhages. At the end of the compression, the visible capillaries were at least four times more numerous than before the test, and the colour of the field was darker, demonstrating a sufference of the subpapillary plexus. Afterwards the darkness of the field and the number of capillaries decreased; 30 min after the test the saturation of field colour was quite similar to baseline. Moreover, the number of pervious capillaries increased in calibre and with many beaker-like haemorrhages, was reduced by 50% in comparison with the capillaroscopic pattern at the end of stasis.

We maintain that the morphofunctional damage to the cutaneous microcirculation observed in this research could be an expression of endothelial alterations to the capillaries in psoriasis, not only in involved but also in apparently healthy skin.

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