Perspective

Psoriasis (Pso) is a chronic immuno-inflammatory disease with a prevalence as high as 3% [1]. Many epidemiological studies showed a significantly higher prevalence of metabolic syndrome in psoriasis as compared to controls; the prevalence of metabolic syndrome and its components increases with severity and duration of psoriasis. Several studies have reported that psoriasis is an independent risk factor for myocardial infarction; however some studies failed to show an increased risk of myocardial infarction in patients with psoriasis and the subject remains controversial [2-6]. In a recent study an increased prevalence of coronary artery disease in severe psoriasis [7].

These findings showed that the prevalence of severe coronary artery disease was increased despite the absence of symptoms or a history of cardiovascular disease in patients with psoriasis. More patients than controls suffered from elevated calcium scores, multiple plaques and stenosis, significant stenosis and 3-vessel disease, or disease in the left main coronary artery. The increased severity of coronary artery disease in psoriasis may be due to more aggressive systemic inflammation, more Th1/Th17-derived cytokines in psoriasis, shared traditional risk factors in psoriasis and cardiovascular disease, or some combination of these causes.

Inflammation is currently considered to be the leading potential unifying mechanism that explains cardiovascular risk in Pso. Atherosclerosis is characterized by a vascular inflammatory process mediated by mononuclear cell infiltration, elaboration of cytokines, increased cellular adhesion, and plaque destabilization, leading to a low-grade systemic inflammatory response that is an indicator of increased future risk of athero-thrombotic events. In contrast to this low-grade inflammatory state observed in atherosclerosis the inflammatory process in Pso is accompanied elevation of cytokines such as TNF-α, interleukin-6, Th1/Th17-derived cytokines in psoriasis. The circulating levels of these cytokines reflect disease activity and duration and can be modified by a variety of anti-inflammatory and disease-4.5 modifying therapies used in Pso.


Methods

A prospective study that will include 30 patients with different
levels of Pso activity 30 healthy subjects (age-matched) will serve as the control group.

**Endothelial Function Measurement**

**Vascular studies:** Imaging studies of the left brachial artery were performed with a Hewlett-Packard SONOS 2500 ultrasound machine equipped with a 7.5-MHz linear-array transducer before and at the end of each of the 3 treatment periods on the basis of a previously published technique[8] and as reported by us previously [9]. Endothelium-dependent vasodilation was assessed by measurement of the change in the diameter of the brachial artery after 60 seconds of reactive hyperemia relative to baseline measurements after deflation of a cuff on the forearm inflated to 250 mm Hg for 5 minutes. Arterial flow velocity was measured for the first 15 seconds after cuff deflation. After baseline conditions were reestablished 15 minutes later, measurements of arterial diameter and flow velocity were repeated, followed by administration of nitroglycerin 0.4 mg by spray under the tongue to assess endothelium-independent vasodilation. Repeated measurements of arterial diameter and flow velocity were made 3 minutes later. All images were coded and recorded on VHS videotape for subsequent blinded analysis. Measurements of flow-mediated dilation were made on 2 occasions from the videotapes of 10 studies selected at random. The mean ± SD of intraobserver differences in measurements was 0.4% ± 0.3% (range: 0.1% to 1.1%), yielding a coefficient of variation of 1.28 and a coefficient of repeatability of 0.6% [11].

**Endothelial progenitor stem cells:** Blood was collected into tubes with Ficoll and sodium heparin for isolation of mononuclear cells, washed twice in phosphate-buffered saline with 5% fetal bovine serum and re-suspended in media (Stem Cell Technologies EndoCult Basal Media with Supplements, Vancouver, BC, Canada) for endothelial progenitor colony-forming assay. Cells were placed on dishes coated with human fibronectin (BIOCOAT® Becton Dickinson Labware, Bedford, MA) at a density of 10^6 cells per well and incubated at 37°C in humidified 5% CO₂. After 48 hours, the non-adherent cells suspended in the growth media were re-plated onto fibronectin-coated 24-well plates at a density of 106 cells per well. After 5 days, colony-forming units, defined as a central core of rounded cells surrounded by elongated and spindle-shaped cells, were counted manually in 4 to 8 wells of a 24-well plate. Interobserver variability of colony determination was assessed by 2 investigators who independently counted colonies in wells from 7 participants; agreement was excellent, with correlation coefficient of 0.998 [12].

**Plan**

Every patient will be recruited by the Dermatology/Rheumatology physician and will undergo the vascular study and stem cells from the peripheral blood will be measured on entry to the study and 3 months afterwards.

**References**