**Materials and Methods**

This study was conducted at the dermatology outpatient clinic, Faculty of Medicine, Cairo University, in the period between April 2018 and September 2018. The study was approved by the Research Ethics Committee, Faculty of Medicine, Cairo University, and all participants signed informed written consents. The study included 30 patients with cutaneous LP and 30 healthy controls undergoing abdominoplasty and other minor surgeries.

Exclusion criteria were: hepatitis C virus antibody-positive participants, receiving treatment in the past 3 months, associated concomitant skin diseases, autoimmune diseases, cancer or chronic infection, pregnancy and lactation, vitamin D supplementation, topical use of vitamin D analogues or receiving phototherapy during the past 3 months.

For all patients, a full history was taken including onset, course and duration of the disease, previous treatment and family history. All participants were asked about the frequency and duration of sun exposure. Adequate sun exposure was considered as exposure sufficient for the production of vitamin D requirements, defined as 5–10 min of unprotected noontime sun exposure of the arms and legs or the hands, arms and face, 2 or 3 times per week.

The weight and height were measured, for calculation of the body mass index: BMI = weight in kg/(height in m)2. Clinical assessment was done to determine the extent of disease using the rule of nine, type of cutaneous LP (classic, hypertrophic, atrophic, linear, annular, palmoplantar), type of oral LP (plaque, reticular and erosive) and the anatomical sites of the lesions.

A 4-ml venous blood sample was taken from each participant for the assessment of serum levels of IL-17 and 25-hydroxyvitamin D (25-OHD). Blood samples were left to clot, then centrifuged and the separated serum was stored at –20˚C. Vitamin D status was defined as: deficient (<20 ng/mL), insufficient (20–29 ng/mL) and sufficient (>29 ng/mL). A 3-mm punch biopsy was taken from the lesional skin of each patient and normal skin of each control and frozen at –20˚C, for the assessment of tissue levels of IL-17. For local anaesthesia, xylocaine was injected around the biopsy site beforehand.

*Quantitation of IL-17 in Serum and Tissue Homogenate Supernatant*

Each skin biopsy was weighed and homogenized in 300 µl phosphate buffer saline, centrifuged at 4,000 *g* for 10 min, then the supernatant was used for determination of IL-17 concentrations. Serum and supernatant were used in measuring IL-17 using a human IL-17 ELISA kit provided from BMS2017/BMS2017TEN supplied from eBioscience, Affymetrix (Vienna, Austria). An anti-human IL-17A-coating antibody was adsorbed onto microwells. Human IL-17A present in the sample or standard binds to antibodies adsorbed to the microwells. A biotin-conjugated anti-human IL-17A antibody was added and bound to the human IL-17A captured by the first antibody. Unbound biotin-conjugated anti-human IL-17A antibody was removed during a wash step. Streptavidin-horseradish peroxidase (HRP) was added and bound to the biotin-conjugated anti-human IL-17A antibody. Unbound streptavidin-HRP was removed during a wash step, and substrate solution reactive with HRP was added to the wells. A coloured product was formed in proportion to the amount of human IL-17A present in the sample or standard. The reaction was terminated by addition of acid, and absorbance was measured at 450 nm. A standard curve was prepared, and the human IL-17A sample concentration was determined.

*Vitamin D Detection in Serum*

Vitamin D was measured in sera using a human 25-OHD ELISA kit provided by Sunredbio, Shanghai, China. This ELISA kit is based on the principle of the double antibody sandwich. 25-OHD was added to a monoclonal antibody enzyme well which is precoated with human 25-OHD. Incubation was done; then, 25-OHD antibodies labelled with biotin were added and combined with streptavidin-HRP to form an immune complex; then incubation and washing were carried out again to remove the uncombined enzyme. Then, chromogen solutions A and B were added, the colour of the liquid was changed to blue. The concentration of the human 25-OHD in the sample was positively correlated. The vitamin D concentrations in sera were determined from the standard curve.

*Statistical Methods*

Data were statistically described in terms of means ± standard deviation, median and range, or frequencies (number of cases) and percentages when appropriate. Comparison of numerical variables between the study groups was done using Student’s *t* test for independent samples in comparing normally distributed data and the Mann-Whitney U test for independent samples for comparing non-normal data. For comparing categorical data, the χ2 test was performed. Fisher’s exact test was used instead when the expected frequency was less than 5. Correlation between various variables was done using Pearson’s moment correlation equation for linear relation of normally distributed variables and Spearman’s rank correlation equation for non-normal variables/non-linear monotonic relation. Accuracy was represented using the terms sensitivity and specificity. Receiver-operating characteristic analysis was used to determine the optimum cut-off value for the studied diagnostic markers. *p* values less than 0.05 were considered as statistically significant. All statistical calculations were done using the computer program IBM SPSS (Statistical Package for the Social Sciences; IBM Corp., Armonk, NY, USA), release 22 for Microsoft Windows.