

Patients and Methods

Patients

A total of 157 consecutive patients with diagnosed moderate-to-severe chronic plaque psoriasis were enrolled from our outpatient clinic database from June 2005 to June 2015.

Of these 157 patients, 105 patients qualified for a subsequent analysis. For a cohort of 36 patients, T-cell subset analysis was performed.

We determined the number of patients who developed lymphopenia within the first 6 months of therapy and the number of patients who became lymphopenic during the whole period observed, up to 2 years after the cessation of Fumaderm®.

Procedures

Epidemiological data such as gender, age at onset of psoriasis, age at onset of fumaric acid ester (FAE) treatment, past systemic treatment, as well as comorbid diseases were recorded.

Fumaderm® dosage was increased according to schedule. Dosage at the time point of first diagnosis of lymphopenia was documented, if available.

PASI was measured immediately before the start of FAE treatment as well as 6 months later.

Whole blood cell counts were collected prior to initiation of Fumaderm® and approximately every 4 weeks during the course of therapy to evaluate the general number of leukocytes, lymphocytes, and the T-cell subset with special regard to CD4+ and CD8+ cells.

Pre-therapy leukocyte, lymphocyte, and CD4+ and CD8+ cell counts were defined as the last measured cell count within 4 weeks prior to initiating FAE therapy. The definition of reduced cell counts and grading according to CTCAE (common terminology criteria of adverse events) version 4.0 is shown in Table 1. For further analysis, we assessed the nadir (defined as the lowest cell count) of the cell types measured during the whole period of treatment.

White blood cell counts were performed by routine clinical laboratory analysis on a Sysmex XE-5000 (Sysmex, Norderstedt, Germany) automated haematology analyser. Additionally T-cell subsets, with special regard to CD4+ and CD8+ cells, were analysed using flow cytometry. The methods applied were stable over the whole interval.

Statistics

The occurrence of lymphopenia during FAE therapy was correlated with dosage of Fumaderm®, epidemiological data, data of medical history, and efficacy of therapy.

All statistical analyses were performed using SPSS v.21.0 (IBM Corp., Armonk, NY, USA). Within-group comparison was undertaken using the non-parametric Wilcoxon and Mann-Whitney U tests for dependent and independent samples, respectively. The potential correlation between the occurrence of lymphopenia during FAE therapy and epidemiological data, data of medical history, and efficacy of therapy was analysed using a 2-tailed Pearson correlation. Differences were regarded significant at $p < 0.05$.