ORIGINAL ARTICLE

Histopathological Evaluation of Patients with Mycosis Fungoides before and after Phototherapy

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ABSTRACT

Background and Objectives: Mycosis fungoides (MF) is the most common type of cutaneous lymphoma accompanied by neoplastic T cells. Histopathological changes after phototherapy could be an effective index for evaluation of treatment. The aim of this study was to compare histomorphological changes in Iranian MF patients before and after phototherapy.

Methods: Skin biopsies of 20 diagnosed MF patients in Razi dermatology Hospital of Tehran University of Medical Sciences were evaluated based on major and minor diagnostic criteria using Guitart classification to assess histological features of phototherapy.

Result: Of 20 studied patients eight patients were man and 12 were woman. Following phototherapy, major histologic criteria including density of infiltrate, epidermotropism and lymphocytic atypia along with some minor histologic criteria such as lymphocytic infiltrate and intraepidermal atypical lymphocytes were significantly alleviated after treatment ($p < 0.05$).

Conclusion: We find a significant decrease in some important histologic parameter of MF after phototherapy, indicating these features may be important diagnostic parameters evaluating therapeutic effect of phototherapy.

INTRODUCTION

Cutaneous T-cell lymphoma (CTCL) is classified as a type of non-Hodgkin's lymphoma, a heterogeneous group of lymphoproliferative disorders originating from malignant T lymphocytes.[1] Mycosis fungoides (MF) is the most common type of cutaneous lymphoma.[2] The exact cause of the disease is still not fully understood, but some genetics and epigenetic aberrations may be involved in the development of disease. In skin biopsy mononuclear atypical cells in small to moderate sizes with epidermotropism of single lymphocytes with halo appearance in conjunction with Pautrier's microabscesses are decisive in diagnosis.[3-5] Both ultraviolet A (UVA) and ultraviolet B (UVB) light have showed authenticated efficacy for treating MF.[6,7] The aim of this study was to evaluate histopathological changes in biopsy taken from MF patients before and after treatment to compare their responses in clinical improvement after phototherapy.

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MATERIALS AND METHODS

A total of 20 MF diagnosed patients refereeing to Razi Hospital of Tehran University of Medical Sciences between 2010 to 2011 years were studied. Patient records such as age, sex and clinical presentation were overviewed and recorded retrospectively. Lesions biopsies taken from patients were evaluated for histopathological features according to Guitart proposed histological criteria for MF.[8]

Histologic parameters was graded and scored according to the density of infiltrate, epidermotropic lymphocytes atypia as major histologic criteria and reticular fibroplasia of the papillary dermis, lymphocytic infiltrate without inflammatory features, primarily intraepidermal atypical lymphocytes as minor histologic criteria. Each feature was scored with full points suggesting MF as described.[8] Each slide was evaluated by a

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dermatopathologist (AG) then patients were subjected for phototherapy. Following six months treatment, additional biopsies were performed and slides reviewed by the same dermatopathologist. Later, obtained scores before and after phototherapy were compared and analyzed in SPSS 18 software using Wilcoxon signed-rank test. A significance level of 0.05 was considered for all tests.

RESULTS

Among 26 MF patients entered into the study, 6 were dropped out from the study in spite of reminding them for taking second biopsy they did not participate to continue the study. Eight out of 20 patients (40%) were males and 12 (60%) were female. The mean age of patients with mycosis fungoides were 45.55 (±20.25) years-old. Figure 1 demonstrates that the patients with high Guitart's score are shift to low Guitart's score after phototherapy. A statistically significant positive histopathological changes was obtained following phototherapy pointing density of the infiltrate (p=0.002), epidermotropism (p =0.001), lymphocyte atypia (p=0.008), lymphocytic infiltrate without inflammatory features (p=0. 046), primarily intraepidermal atypical lymphocytes (p=0.001) (Table 1). No change was observed in reticular fibroplasia of the papillary dermis (p = 0.18) after phototherapy (Figure 2). In addition to above features, some histopasthologic findings are listed in Table 2.

DISCUSSION

There is no standard treatment for MF. Phototherapy with NBUVB and PUVA could be useful and effective in alleviating patches and plaques in treatment-resistant MF.[9,10] There are not enough studies around histomorphological changes following phototherapy in MF patients. In this study we evaluate therapeutic effect of phototherapy by histologic criteria for MF proposed by Guittar et al[8] to assess post-treatment histopathologic changes. Obtained results showed that all scores of major histologic criteria significantly improved following treatment. Minor histologic criteria such as lymphocytic infiltrate without inflammatory feature and intraepidermal atypical lymphocytes were also significantly alleviated after phototherapy. Our results confirm the study of Zemheri et al[11] in which inflammation and epidermotropism were attenuated after treatment. Although some studies reported papillary dermal fibrosis as a sensitive feature;[12,13] similar to Zemheri et al[11] study we showed no change in fibrosis, though not necessarily indicative feature for histopathological evaluation in MF treatment. In addition a number of other features were changed after treatment; since the total number of these feature was small in size to compare them with corresponding features following treatment, so we hesitate to give any comment in this regard.

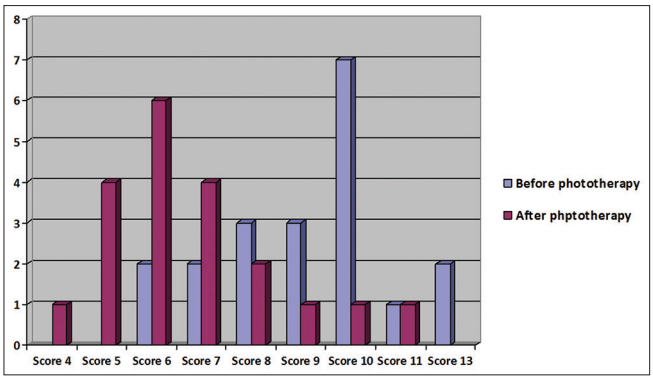

Figure 1: The patients number with Guitart's score before and after phototherapy. Note that the patients before phototherapy have higher Guitart's score comparing to after phototherapy

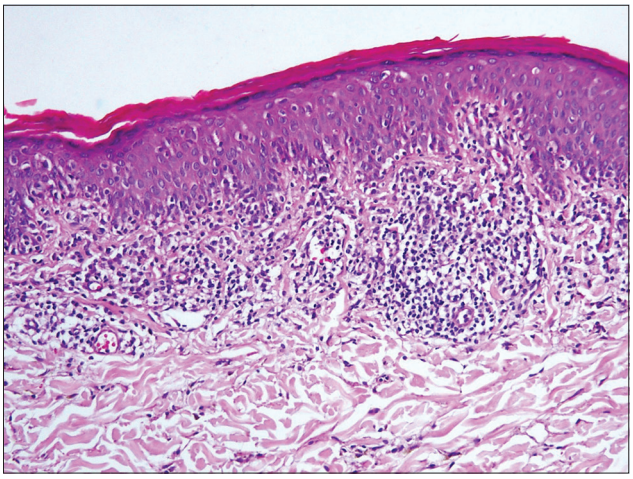

Figure 2: (A) Histopathology examination shows epidermotropism of atypical haloed lymphocytes aligned along basal layer with relatively-dense superficial infiltration and dermal fibroplasia before treatment (H&E × 20)

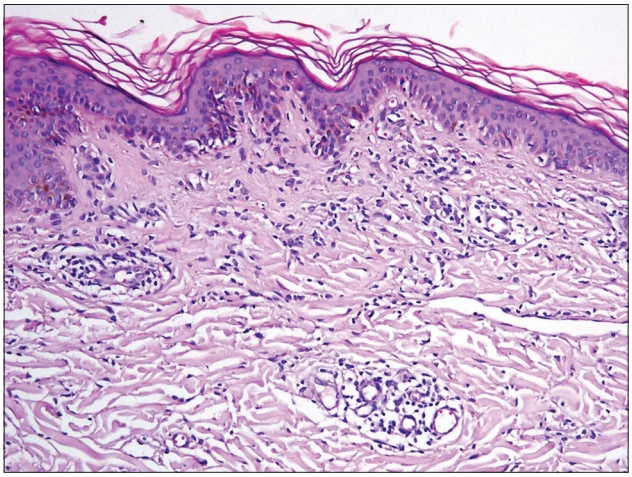

Figure 2: (B) The same patient after phototherapy with decrease of epidermotropic lymphocytes and lower intraepidermal haloed lymphocytes was well as scant superficial infiltration (H&E × 20)

CONCLUSION

Based on the data presented here no side effects such as pigmentation was found after treatment indicating

Table 1: Major and minor histologic criteria for scoring MF

Histopathologic findings	Score	Mean score before phototherapy	Mean score after phototherapy	Wilcoxon test p-value
Major histologic criteria				
Density of infiltrate	0-3	1.7	1.2	0.002
Epidermotropism	0-3	1.85	1.25	0.001
Lymphocytic atypia	0-3	1.8	1.3	0.008
Additional features				
Reticular fibroplasia of papillary dermis	1	0.95	0.80	0.18
Lymphocytic infiltrate without inflammatory feature	1	0.95	0.75	0.046
Intraepidermal atypical lymphocytes	1-2	1.95	1.40	0.001
Total score				
Perivascular/interface dermatitis	0-2	Range: 6-13	Range: 4-11	0.000
Atypical lymphocytic infiltrate	3-4	9.2 (mean)	6.7 (mean)	
Atypical lymphocytic infiltrate suggestive of MF	5-6			
Mycosis fungoides	≥7			

A total score more than 7 was considered MF, scores before and after phototherapy in MF patients in Razi skin hospital, were compare using Wilcoxon non-parametric test, statistically significant features have a P value less than 0.005

Table 2: Comparison of histopathological changes before and after phototherapy in 20 MF patients in Razi skin hospital

Histopathologic finding	Before phototherapy	After phototherapy
Folliculotropism	4	2
Panniculitis	3	1
Psoriasiform hyperplasia	1	0
Eccrine glands inflammation	2	1
Thick wall vessels	2	0
Ulceration	2	0
Melanin incontinence	2	2
Vascular proliferation	1	0
Microabscess formation	3	3
Telangiectasia	1	0
Parakeratosis	1	1
Civatte body	1	0
Spongiosis	3	3

phototherapy as an effective and safe treatment choice for treating MF patients. It be concluded that histological features, including changes in epidermotropism, stratum corneum, epidermis, and dermis, may be good indicative in evaluation of treatment effectiveness for MF phototherapy.

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