

Prevalence of diabetes mellitus and impaired fasting blood glucose in patients with Lichen Planus

Najmosadat Atefi¹, Mehrdad Majedi², Shadi Peyghambari³, Shadi Ghourchian⁴

Department of Dermatology, Rasoul-e-Akram Hospital, Tehran University of Medical Sciences, Tehran, Iran.

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Abstract

Background: The relationship between Lichen Planus (LP) and diabetes was studied previously, but the results were in conflict. The aim of this study was to find the prevalence of diabetes mellitus (DM) in patients with LP among Iranian patients.

Methods: In this study, 80 patients with LP were enrolled. They referred to dermatology clinic of our hospital during one year. A self-designed checklist for the study included duration of the disease, the pattern of the distribution of lichenoid lesions and fasting blood sugar (FBS).

Results: From 80 patients with LP, 16 (20%) had diabetes. Also, 14 patients (17.5%) had impaired fasting glucose. The mean age of diabetic patients was significantly higher than non-diabetic group ($p=0.039$). In addition, the duration of LP in patients with DM was significantly higher than non-diabetic patients ($p=0.024$).

Conclusion: In our study, we saw a high prevalence of DM among patients with LP. Comparing our findings with the overall prevalence of DM in Iran, there was a significant difference between the prevalence of DM among patients with LP and the overall prevalence ($p=0.001$). Regarding our findings screening for FBS in patients with LP is required in Iran.

Keywords: Lichen Planus, Diabetes mellitus, Impaired fasting glucose.

Introduction

Lichen Planus (LP) occurred followed by an inflammatory reaction to skin tissue with unknown etiology. All parts of the world are involved by this disease. There is no race priority. The incidence rate varies from 0.5 to 1.9 in different countries (1,2). The flexure surface of wrist, thigh, distal of lower extremity, abdomen, genitalia, nail, and oral mucosa are the main involved organs (2). Although the pathogenesis is not exactly known, but autoimmune reaction is the most probable reason (2). This is theorized that when an antigen such as virus or

drug enters to a prone body and could transfer to epidermal keratinocytes and induces antigen changes in these cells. Therefore, the keratinocytes will be rejected by the immune system (2,3). Defects in expressing carbohydrates in epidermal cells, and abnormal enzyme activities that may induce disabled hormones for metabolic processes are other causes of LP (4).

Previous researchers have found that the prevalence of DM and abnormal glucose tolerance test among patients with LP was 14-85% (1,5-9). In the other hand, some did not agree with this statement (10,11). The relationship between DM and LP has not

1. (Corresponding author) Assistant professor of dermatology, Rasoul-e-Akram Hospital, Tehran University of Medical Sciences, Tehran, Iran. Address: Rasoul-e-Akram Hospital, Tehran, Iran. najmosadatatefi8931@yahoo.com

2. General practitioner, Rasoul Clinical and Developmental Research Center (RCDRC) of Rasoul-e-Akram Hospital, Tehran University of Medical Sciences, Tehran, Iran. mehrdadmajedi8931@yahoo.com

3. Medical student, Shahid Beheshti University of medical sciences, Tehran, Iran. shadipeyghambari8931@yahoo.com

4. Medical student, Students' Scientific Research Center (SSRC), Tehran University of Medical Sciences, Rasoul Clinical and Developmental Research Center (RCDRC), Rasoul-e-Akram Hospital, Tehran, Iran. shadighurchian@gmail.com

been studied in Iran.

Thus, this study investigates the prevalence of DM among 80 patients with LP in our referral hospital.

Methods

This was a cross-sectional study conducted in Rasoul-e-Akram Hospital of Tehran University of Medical Sciences, Tehran, Iran. The hospital is a referral dermatology center of west, south and east of our city. Verbal clarification about the aim of the study was established between the authors and the patients. During one year, all patients with LP and confirmed by pathology were enrolled. Patients who had more than one dermatologic diseases and pregnant women were excluded from the study. Because patients with LP are usually visited in clinics (as outpatient), and some of them do not come back for the lab tests, we could not follow all of them. Hence, we excluded the patients who did not have sufficient data. Our study consisted of 80 individuals and each patient, a checklist had a checklist. The checklist included sex, age, duration of the disease, family history of LP, fasting blood sugar (FBS) and the pattern of the distribution of lichenoid lesions.

Statistical Analysis

For statistical analysis we entered the data from the check lists to SPSS version 15. For describing continues data, we used the mean \pm standard deviation (SD). Frequency and percentage describe categorical variables. For comparison, we used Mann-Whitney U-test, Chi² test and independent T-test in our analysis. We used Chi² test to compare our findings with predicted prevalence which was announced by previous studies. A p-value less than 0.05 was considered significant.

Results

We evaluated 80 patients with the confirmed diagnosis of LP. Of all patients, 48 (60%) were female and the rest male. The mean age was 52.04 ± 8.88 . For diagnosis of DM we used the criteria that were em-

ployed by American Diabetes Society in 2007. As a result, 16 patients (20%) had DM type II and none had a history of DM type I. Of 16 patients with confirmed diagnosis of DM II, 7 had the known cases of DM type II and others diagnosed during the study.

Impaired fasting glucose (IFG) was defined as a fasting blood sugar of 100 to 125 mg/dL (5.6 to 7.0 mmol/L). In our study, 14 patients (17.5%) were classified as non-diabetic patients ($126 > \text{FPG}$) but with IFG.

Altogether, of 80 patients with LP, 30 (37.5%) had an impaired glucose metabolism.

The mean age of the LP patients with DM was significantly more than those who were not affected by DM, (56.02 ± 7.8 year comparing to 48.05 ± 9.3 year, $p=0.039$). The sex distribution was not significantly different for both groups.

The mean duration of LP was 23.61 ± 18.1 months in our patients. There was a significant relationship between the mean duration of LP and the presence of DM type II (27.3 ± 20.5 month comparing to 18.7 ± 16.8 month, $p=0.024$).

Among all patients 32 (40%) were presented only with skin lesions, 6 (7.5%) had only oral lesions and 44 (52.4%) had both skin and oral cavity lesions.

There was no significant relationship between the pattern of the distribution of lichenoid lesions and the presence of DM.

Considering family history of the patients, 12% had a positive family history for LP. There was no significant relationship between the presence of positive family history for LP and the DM.

Discussion

In this study, we observed a high prevalence of DM in patients with LP. LP is defined as an inflammatory keratotic dermatitis with an unknown origin (2,3,12). Although the studies about the relationship between DM and LP have been progressed during the last decades, the results are in conflict [8, 13]. The studies had different design, therefore variation on methods and

criteria could impacted their results (14, 15).

DM is defined as a syndrome in which hyperglycemia occurs because of insulin defects. Skin lesions can be seen in DM according to dysregulation of glucose, insulin, and lipids (16).

For the first time, the prevalence of DM among patients with oral LP was announced 40% by Grinspan, et al (17). Studies about the relationship between DM and LP have been improved recently (15). Some of them revealed that the prevalence of DM among patients with LP is more than normal population (18,8). The prevalence of DM among patients with LP was 42% in 1976 (19), 28% in 1984 (20) and 3% in 1993 (21). In last decade, in 2000, Guggenheimer, et al (22) reported the incidence rate of 0.5% of oral LP among patients with insulin-dependent DM. In 2004, the prevalence of DM in 140 Turkish people with LP was revealed as 15.7% (9). Moreover, in 2007, the prevalence of DM in patients with LP was found as 26.7% in that country (23). In addition, they found a significant difference between the concentration of HbA1C, fasting blood sugar and insulin resistance in patients with LP and the control group. In the other hand, in 1995, Quirin et al. did not find any patients with oral LP in 120 patients with DM (13). Some authors also revealed no correlation between LP and DM (10, 11). In 2011, Syeda Arshiya, et al observed DM in 10% (5 of 50) of their patients with oral LP in their study performed in India (24). They found that the frequency was far less than the expected prevalence. The prevalence of DM in patients with oral LP in India was reported 62% by Powell et al in 1974 and 42% by Lowe et al in 1976 (24). In Iran, in 2005 the prevalence of DM was announced as 7.7% among 70981 people with the age range of 25-65 years old (25). In 2002, Naheed et al. (16) reported that LP was seen in 4.4% of patients with DM in some Iranian patients. In our study, we found that the prevalence of DM was 20% among the patients with LP. Our result is in contrast with what has been revealed

recently in January 2011 by Syeda Arshiya et al in India as an Asian country (5 of 50 patients with LP) (24). Also we observed the prevalence of 17.5% for IFG in comparison with the prevalence of 12.8% in 1993 by Bussell (26). It seems that the relationship between DM and LP is remarkable among Iranian. Additionally, we investigated the relationship between IFG or DM and the pattern of distribution of lichenoid lesions. We also compared the mean age of the diabetic patients with non-diabetic group among patients with LP. The mean age of the patients with LP and DM was significantly higher than non-diabetic with LP. We did not detect any significant relationship between the pattern of distribution of lichenoid lesions and the presence of DM.

In this study, 37.5% of patients had impaired glucose metabolism (DM or IFG). This prevalence was found 62% by Powell, 14.6% by Christensen, 30.3% by Nigan, and 45.6% by Halevy (27- 30).

Similar to previous studies (5,14), we also found no significant relationship between the pattern of distribution of lichenoid lesions and the presence of DM. Also like other studies we did not find any significant relationship between gender and the presence of DM (15,18), although female involvement were more than male in most of the previous studies (9,14,15,31).

In contrast with previous studies (29,31), we found a significant correlation between the duration of LP disease and DM. In our study, the duration of LP disease in patients with DM was significantly longer than the others. Although there are different results about the prevalence of DM among patients with LP, the higher incidence of DM and IFG in patients with LP suggests that the similar etiology can cause these diseases, or DM is one of the unknown etiologies of LP (5,14,15). Some researchers recommended that the drugs used in DM can cause lichenoid reactions which cannot be distinguished from classic LP disease clinically (8,15). While other researchers explained it that as a haphazard coincidence (6, 28).

Conclusion

When compared our findings with the prevalence of DM in Iran in 2008 [25], no significant difference between the prevalence of IFG in patients with LP and the overall prevalence (16.8%) ($p= 0.867$) was found, but there was a significant difference between the prevalence of DM among patients with LP and the overall prevalence studied by Esteghamati et al (7.7%) ($p= 0.001$) [25].

Regarding our study, it is recommended that:

1. Patients who are referred for LP, are advised to be checked for FPS.

2. If it is suspected that lichenoid lesions caused by DM drugs, histopathology and immunofluorescence tests can be helpful.

3. More studies with specific designs such as cohort and case-control studies, especially with larger sample size are recommended.

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