

Prevalence of skin disorders in patients with Type-2 Diabetic patients attending a tertiary care Hospital in Kerala

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Abstract

Background: Skin disorders are often observed in diabetics. However there are only a few epidemiologic studies that have mentioned the prevalence of skin diseases in patients with type-2 diabetes mellitus

Aim: To evaluate the frequency of dermatologic disorders in patients with type-2 diabetes mellitus.

Methods: One hundred and fifty one type-2 diabetic patients attending an outpatient Department of Dermatology were included. All patients were asked about any skin problems they might have and subsequently all were examined, regardless of their response.

Results: The overall prevalence of one or more identifiable/apparent skin conditions was 73.3%. The most common skin conditions were infections (34.7%), non-Candidal intertrigo (18.5%), eczemas (13.2%), psoriasis (13.2%), diabetic dermopathy (12.2%), and prurigo (7.9%). According to sex, there was no significant difference in the prevalence of skin disorders.

Conclusion: Skin conditions were common in patients with type-2 diabetes mellitus. Hence, involvement of skin is inevitable and multifarious in diabetes mellitus.

Keywords: Type-2 diabetes mellitus, Skin disorders, Infections

Introduction

The epidemiologic statistics of skin diseases provide us with information about prevalence, age, and sex differences in affected groups, and their regional distribution.⁽¹⁾ It also offers the most useful way of evaluating causes of skin disorders in subjects with systemic disease.

The number of individuals with diagnosed diabetes mellitus has increased fivefold between 1958 and 1993. The World Health Organization estimates that the total number of people with diabetes the world over will double to 200 million by the year 2010. The disease can result in complications affecting all systems of the body, including the skin.⁽²⁾ Cutaneous manifestations of diabetes mellitus can be classified in four categories: skin diseases with strong to weak association with diabetes (necrobiosis lipoidica, diabetic dermopathy, diabetic bullae, yellow skin, eruptive xanthomas, perforating disorders, acanthosis nigricans, oral leucoplakia, lichen planus), infections (bacterial, fungal), cutaneous manifestations of diabetic complications (microangiopathy, macroangiopathy, neuropathy) and skin reactions to diabetic treatment (sulphonylureas or insulin).⁽³⁾

While skin disorders are often observed in diabetics, there are only a few epidemiologic studies that have mentioned the prevalence of skin diseases in patients with type-2 diabetes mellitus.^(4,5) Such information and statistics can form an important basis for population-based health policies. There is no epidemiologic data related to skin disorders in diabetics reported from Kozhikode district, Kerala. Thus we designed the study to analyze the prevalence and

pattern of skin disorders among type-2 diabetic subjects from Kozhikode district of Kerala.

Methods

One hundred and fifty one type-2 diabetic patients (106 women and 45 men), attending the outpatient clinic at KMCT Medical College, Calicut were evaluated. This study was conducted for one year (2014-15). Institutional ethics committee's clearance was obtained prior to start of the study.

All patients were then asked about any skin problems they might have and subsequently all were examined, regardless of their response. A total of 26 dermatologic disease entities were categorized. Information regarding age, sex, and the presenting disorders was recorded. Diagnosis of various skin conditions was based generally on characteristic clinical features, but the diagnosis of all mycoses was confirmed by potassium hydroxide preparation. Statistical analysis was performed using the chi square, Fisher exact, and Student's t-test.

Results

The ages vary from 33 to 76 years (mean age 54±17), and known diabetes durations from 0 to 26 years (mean duration 11±4 years). The overall prevalence of one or more identifiable/apparent skin conditions was 85.4%. The most common skin conditions and their respective prevalence were infections (31.7%) (mostly mycoses), non-Candidal intertrigo (20.5%), eczemas (15.2%) (mostly

neurodermatitis), psoriasis (11.2%), diabetic dermopathy (11.2%), and prurigo (9.9%) (Table 1).

Among skin infections, mycoses was the most common skin infection (24.5%) (37/151), followed by bacterial infections (4.6%) (7/151) and viral infections (3.9%) (6/151). Tinea pedis was the most common fungal skin infections (16.5%) (25/151), followed by Candidiasis group (8.6%) (13/151), tinea unguium (5.9%) (9/151), and tinea cruris (1.3%) (2/151).

Neurodermatitis was the most common eczema 5.9% (9/151), followed by seborrheic dermatitis (3.9%) (6/151) and atopic dermatitis (2.6%) (4/151).

According to sex, there was an apparent difference in the prevalence for eczemas, which showed a male predominance, and non-Candidal intertrigo, psoriasis, diabetic dermopathy, and prurigo where females showed dominance. However, these differences were not significant statistically ($p > 0.05$) (Table 1).

Table 1: Prevalence of skin disorders in diabetes mellitus

| Dermatologic Disorder | Males (Nth = 45) | Femal (N^t = 106) | Total (N^t = 151) | Male/ Female (Nth/ N^t = 0.42) |
|------------------------------|------------------------------------|------------------------------------|------------------------------------|--|
| Any skin condition | 38(84.4) | 91(85.8) | 129(85.4) | 0.41* |
| Infections | 14(31.1) | 34(32.0) | 48(31.7) | 0.41* |
| Non-Candidal Intertrigo | 6(13.3) | 25(23.5) | 31(20.5) | 0.24* |
| Eczemas | 9(20.0) | 14(13.2) | 23(15.2) | 0.64* |
| Psoriasis | 2(4.4) | 15(14.1) | 17(11.2) | 0.13* |
| Diabetic Dermopathy | 3(6.6) | 14(13.2) | 17(11.2) | 0.21* |
| Prurigo | 3(6.6) | 12(11.3) | 15(9.9) | 0.25* |
| Vitiligo | 2(4.4) | 3(2.8) | 5(3.3) | 0.66* |
| Rubeosis Facel | 2(4.4) | 3(2.8) | 5(3.3) | 0.66* |
| Eruptive Xanthoma | — | 3(2.8) | 3(1.9) | — |
| Diabetic Foot | 2(4.4) | — | 2(1.3) | — |
| Actinic Keratosis | — | 2(1.8) | 2(1.3) | — |
| Urticaria | — | 2(1.8) | 2(1.3) | — |
| Callus | — | 2(1.8) | 2(1.3) | — |
| Scleredema Adultorum | 1(2.2) | — | 1(0.6) | — |
| Necrobiosis Lipoidica | — | 1(0.9) | 1(0.6) | — |
| Ichthyosis | 1(2.2) | — | 1(0.6) | — |

Discussion

Various skin disease surveys have concluded that skin diseases are very common in patients with diabetes mellitus, infections being high on the list like our study. People with diabetes are vulnerable for skin infection. In one study from Pakistan which determined 82% overall prevalence of skin disorders, 49% of cases with diabetes had a skin infection.⁽⁴⁾ In another study from Italy, the overall prevalence of skin disorders is 61.2% for patients with type-2 diabetes. Infections, diabetic dermopathy, psoriasis and prurigo are reported as the most common skin disorders. Non-Candidal intertrigo and eczemas, which are determined among the top six skin disorders in our study, aren't notified in the study.⁽⁵⁾ The small differences in results of these studies can possibly be explained by environmental and socioeconomic factors as well as by the degree/extent of accessibility to appropriate medical care. Non-Candidal intertrigo, present in one-fifth of subjects, may be related to the high rate of obesity in diabetic patients in our study.

There are reports of a significant association of diabetes mellitus and psoriasis in a large series of patients with psoriasis.^(6,7) We also found these disorders coexist in 11.2% of our cases. According to Avci et al.'s a novel study,⁽⁷⁾ individuation of the various hues of erythema in psoriatics by careful dermatological examination or routine measurements of lesional erythema may alert the physician to possible impaired glucose tolerance in the presenting subject, and this may affect disease severity.

From skin diseases with strong to weak association to diabetes, necrobiosis lipoidica and eruptive xanthomas are determined rather uncommon while diabetic dermopathy is determined among the top six skin disorders in our study. As a matter of fact, it is reported that diabetic dermopathy is the most common cutaneous marker of diabetes in literature.⁽⁸⁾

Our study shows that skin conditions are common in patients with type-2 diabetes mellitus and about four-fifths of them are affected at any given time. According to Pareto's principle, even though dermatology is

characterized by an enormous range of disease/reaction patterns, prevalence surveys suggest that the bulk of the skin diseases come from fewer than 10 categories. Such observations are useful in developing educational programs and primary health care policy.⁽¹⁾ In our study, the most common six skin disorders on the list (infections, non-Candidal intertrigo, eczemas, psoriasis, diabetic dermopathy, and prurigo) comprised 86.5% of the skin conditions encountered and skin infections accounted for 31.7% (48/151) of all the cases. A large proportion of these diseases/disorders can be easily diagnosed by dermatologic examination and most are amenable to treatment. If we consider that all these skin conditions need specialist care at some point, this will significantly increase the workload of dermatology clinics.

Conclusion

Proper skin care and long-term control of blood glucose levels may reduce the risk of some of skin disorders in diabetic subjects. Without treatment, complications can arise, including open sores (ulcers) and, in very severe cases, even gangrene or life-threatening infection. Skin problems in a person with diabetes may indicate the need for more aggressive diabetes management; in otherwise healthy people, some skin abnormalities may signal a need for an evaluation to determine if diabetes present.

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