



CORRELATION OF HbA1c IN DIABETIC PATIENTS WITH SKIN DISEASES A RETROSPECTIVE STUDY

Dr. shaik Humera* Post Graduate*Corresponding Author

Dr.p.sailaja Professor & Hod

Dr.vemula Sundeep Post Graduate

ABSTRACT **Background** Type II diabetes mellitus is known to have several dermatological manifestations, which could be indicative of the severity of diabetes mellitus. Hence, we conducted a retrospective study to assess the prevalence of skin manifestations and how they correlate with HbA1c. **Materials and Methods:** It's a retrospective study conducted over 6 months in diabetic patients attending dermatology OPD. The type of skin manifestation was correlated with the HbA1c values. **Results** Study included 100 patients with type II diabetes mellitus. Of these, 45 patients presented with infectious lesions, vascular complications were present in 32 and the remaining patients had miscellaneous skin lesions. Most common manifestations were pruritus, diabetic dermopathy and Pyoderma gangrenosum. Elevated HbA1c levels were noted in patients with scleredema, lichen planus and acanthosis nigricans. However, HbA1c was found to be low in patients with hypopigmented lesions such as that of Leucoderma. **Conclusion** HbA1c can be a useful marker of predicting skin manifestations in those patients with type II diabetes mellitus.

KEYWORDS : Diabetes mellitus, dermopathy, skin lesions

Introduction

Diabetes mellitus is the most common endocrine abnormality seen world over, with India being the world leader. It is characterized by an insulin defect or deficiency, thereby affecting the metabolism of carbohydrates, fats and proteins (1). While it was previously considered a disorder of the affluent, it is no longer true. There is an estimated 40.9 million people in India suffering from this disorder, and it is expected to rise to 69.9 million by 2025 [2]. WHO estimated that by year 2030, there would be about 80 million people affected by this in India alone [3]. Skin manifestations are common in such patients, with a prevalence of about 30% [4]. However, the aetiopathogenesis can vary from patient to patient.

Skin lesions in diabetics can be secondary to infections (most common), depressed immune system, microvascular changes and accelerated atherosclerosis (5).

There are many proposed pathomechanisms for skin involvement in DM, which includes abnormal carbohydrate metabolism, other altered metabolic pathways, atherosclerosis, microangiopathy, neuron degeneration and impaired host immune mechanism.[5] Some studies revealed the correlation of skin manifestation of DM with HbA1c and microangiopathic changes, but larger scale studies are yet to be done (6). Hence, we conducted a retrospective study to correlate HbA1c with various skin manifestations of diabetic patients.

Materials and Methods

This study included 100 patients that had previously visited the dermatology OPD for evaluation of skin diseases. From case records, demographic details, clinical history and laboratory investigation were recorded in a semi structured proforma. The data was then entered into an MS excel spreadsheet and analysed. Data were statistically described in terms of range, median, mean \pm standard deviation (\pm SD), as appropriate. The continuous variable data were analyzed using the t-test and the categorical data were analyzed using the Chi-square test. SPSS v21 was used for statistical analysis and a $P \leq 0.05$ was considered statistically significant.

Results

Study included 100 patients who were with type II diabetes mellitus. Of these, 45 patients presented with infectious lesions, vascular complications were present in 32 and the remaining patients had miscellaneous skin lesions. Most common manifestations were pruritus, diabetic dermopathy and Pyoderma gangrenosum. Elevated HbA1c levels were noted in patients with scleredema, lichen planus and acanthosis nigricans. However, HbA1c was found to be low in patients with hypopigmented lesions such as that of Leucoderma.

Amongst the infectious group, pyoderma was most common, followed

by genital candidiasis. When we looked at the vascular complications, wet gangrene was most common, followed by diabetic dermopathy.

When we looked at other miscellaneous lesions, we found acanthosis nigricans to be the most common, followed by xanthelasma and pruritus. Other miscellaneous lesions were maculopapular rash, vitiligo/leucoderma, skin tag, ichthyosis and xerosis and psoriasis or scleredema.

When we analysed the HbA1c values, we found that higher levels were found in patients with scleredema (10.2 \pm 0.89), acanthosis nigricans (9.8 \pm 0) and lichen planus (9.75 \pm 0.56).

There was a significant associations of many of the cutaneous manifestations with HbA1c.

Discussion

Type II diabetes mellitus is a common endocrine condition that is associated with several types of dermatologic manifestations. Patients with diabetes are seldom unaware of their skin manifestations, and hence the diagnosis is often delayed. Most of the time a patient is unaware that his skin condition is due to diabetes. Various studies have estimated the prevalence to be between 7-30%, but the exact figures are not known (12). In this study, the different manifestations may be due to poor control, lack of knowledge and poor socioeconomic status. In a study done by Hussain et al (13), it was found that most patients don't report their skin condition as it doesn't bother them, possibly due to neuropathic symptoms associated with diabetes.

Several studies have shown that skin manifestations in diabetics are seen in the 5th decade. In this study, the mean age of the population was 52.2 \pm 9.86 years.

The distribution of the various skin manifestations varies between different populations and also based on the glycemic control. In a study done in India, it was found that infections were the most common, especially fungal, which was unlike the findings of this present study. In a study done by Mahajan et al on Indian population, they also confirmed that infections were most commonly encountered (13). However, in a study conducted in Croatia, they found microvascular complications such as diabetic dermopathy to be most frequently encountered. This would show how the environment of the study participants can influence the type of skin lesion.

Higher HbA1c was associated with scleredema and lichen planus. These similar findings were seen in studies done by Goyal et al (14) and Mahajan et al (13) in the Indian population.

Conclusion

HbA1c maybe helpful in predicting the type of skin lesions in patients

with diabetes. However, further prospective studies are required to confirm the same.

REFERENCES

1. Bud JL, Oledur JE. Fitzpatrick's Dermatology in General Medicine. 6th ed. Vol. 2. New York, Toronto: McGraw Hill Companies; Diabetes mellitus; pp. 1651–61. [Google Scholar]
2. Sicree R, Shaw J, Zimmet P. Diabetes and impaired glucose tolerance. In: Gan D, editor. Diabetes Atlas. International Diabetes Federation. 3rd ed. Belgium: International Diabetes Federation; 2006. Pp. 15–103. [Google Scholar]
3. Wild, S., Roglic, G., Green, A., Sicree, R., & King, H. (2004). Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes care*, 27(5), 1047–1053. <https://doi.org/10.2337/diacare.27.5.1047>
4. Romano, G., Moretti, G., Di Benedetto, A., Giofrè, C., Di Cesare, E., Russo, G., Califano, L., & Cucinotta, D. (1998). Skin lesions in diabetes mellitus: prevalence and clinical correlations. *Diabetes research and clinical practice*, 39(2), 101–106. [https://doi.org/10.1016/s0168-8227\(97\)00119-8](https://doi.org/10.1016/s0168-8227(97)00119-8)
5. Sibbald, R.G., & Schacter, R.K. (1984). The Skin and Diabetes Mellitus. *International Journal of Dermatology*, 23.
6. Shemer, A., Bergman, R., Linn, S., Kantor, Y., & Friedman-Birnbaum, R. (1998). Diabetic dermopathy and internal complications in diabetes mellitus. *International journal of dermatology*, 37(2), 113–115. <https://doi.org/10.1046/j.1365-4362.1998.00273.x>
7. Buckingham, B., Perejda, A. J., Sandborg, C., Kershner, A. K., & Utito, J. (1986). Skin, joint, and pulmonary changes in type I diabetes mellitus. *American journal of diseases of children* (1960), 140(5), 420–423. <https://doi.org/10.1001/archpedi.1986.02140190030018>
8. Alvin C. 16th ed. Vol. 2. New York: McGrawHill Companies; Powers: Diabetes mellitus. In: Harrison's Principle of Internal Medicine; p. 2152, p. 80. [Google Scholar]
9. Foster DW. Diabetes mellitus. In: Braunwald E, Issebacher KJ, Petersdorf RJ, Wilson JD, editors. *Harrison's Principles of Internal Medicine*. New York: MacGraw-Hill; 1987. Pp. 1791–3. [Google Scholar]
10. Cvitanović, H., Jančić, E., Knežević, E., & Kuljanac, I. (2009). Skin changes in patients with diabetes mellitus in Karlovac county.
11. Yosipovitch, G., Hodak, E., Vardi, P., Shraga, I., Karp, M., Sprecher, E., & David, M. (1998). The prevalence of cutaneous manifestations in IDDM patients and their association with diabetes risk factors and microvascular complications. *Diabetes care*, 21(4), 506–509. <https://doi.org/10.2337/diacare.21.4.506>
12. Ghosh, K., Das, K., Ghosh, S., Chakraborty, S., Jatua, S., Bhattacharya, A., & Ghosh, M. (2015). Prevalence of skin changes in diabetes mellitus and its correlation with internal diseases: A single center observational study. *Indian Journal of Dermatology*, 60(5), 465. <https://link.gale.com/apps/doc/A428504509/HRC?u=anon-e4ed87f1&sid=googleScholar&xid=410cbe98>
13. Mahajan S, Koranne RV, Sharma SK. Cutaneous manifestation of diabetes mellitus. *Indian J Dermatol Venereol Leprol*. 2003;69:105–8. [PubMed] [Google Scholar]
14. Goyal, A., Raina, S., Kaushal, S. S., Mahajan, V., & Sharma, N. L. (2010). Pattern of cutaneous manifestations in diabetes mellitus. *Indian journal of dermatology*, 55(1), 39–41. <https://doi.org/10.4103/0019-5154.60349>