IJD ORIGINAL ARTICLE

Prevalence of cherry angioma in patients with type II diabetes mellitus in comparison to healthy adults

Azadeh Mohebi, MD [1]
Rezvan Amiri, MD [2]
Nasim Nejadsajadi, MD [3]
Maryam Khalili, MD [2]
Saman Mohammadi, MD [4]
Abnoos Mokhtari, MD [3]
Mahin Aflatoonian, MD [1*]
Zahra Rahnama, MD [3]

1. Department of Dermatology, Afzalipour Hospital, Afzalipour Faculty of Medicine, Kerman University of Medical Sciences, Kerman, Iran
2. Leishmaniasis Research Center, Kerman University of Medical Sciences, Kerman, Iran
3. Clinical Research Development Unit, Afzalipour Hospital, Kerman University of Medical Sciences, Kerman, Iran
4. Department of Dermatology, Kerman University of Medical Sciences, Kerman Iran

*Corresponding author:
Mahin Aflatoonian, MD
Department of Dermatology, Afzalipour Hospital, Kerman University of Medical Sciences, Kerman, Iran.
Email: maaflatoonian@gmail.com

Received: 6 February 2022
Accepted: 19 September 2022

Background: The association of cherry angioma with metabolic syndrome and fatty liver has been proposed in a few studies. This study evaluated the prevalence of cherry angiomas in patients with type II diabetes mellitus compared with healthy adults.

Methods: This cross-sectional study was conducted on 100 patients with type II diabetes mellitus and 100 age and sex-matched healthy adults. Demographic features of the participants and the location and number of the lesions were recorded. Data were analyzed by SPSS 16. Mean ± standard deviation and frequency were used for quantitative analysis. The chi-squared test and independent t-test were utilized to evaluate the association of qualitative and quantitative data with the number of cherry angiomas, respectively.

Results: Cherry angiomas were more prevalent in the diabetes group (47%) than in controls (30%) ($P = 0.013$). Lesions in diabetic patients were more prevalent in females than males ($P = 0.042$). Furthermore, the number of lesions in the diabetes group significantly increased parallel to aging ($P = 0.004$).

Conclusion: In the present study, significantly more cherry angiomas were observed in patients with type II diabetes mellitus than in healthy controls. Furthermore, the number of lesions was higher in females and elderly subjects in the diabetes group.

Keywords: cherry angioma, diabetes mellitus, metabolic syndrome

Iran J Dermatol 2023; 26: 134-137

DOI: 10.22034/ijd.2022.322510.1500

INTRODUCTION

Diabetes mellitus type 2 (non-insulin-dependent diabetes mellitus, NIDDM) is an endocrine disease from which approximately 366 million people suffer worldwide [1]. The prevalence of the disease in Iran and Kerman is estimated at 14.4% and 6.5–10.6%, respectively [2,3]. Skin involvement is seen in 30–100% of cases. Occasionally, skin manifestations appear

Please cite this article as: Mohebbi A, Amiri R, Nejadsajadi N, Khalili M, Mohammadi S, Mokhtari A, Aflatoonian M, Rahnama Z. Prevalence of cherry angioma in diabetic patients in comparison to healthy adults. Iran J Dermatol. 2023; 26(3): 134-137.

before others, representing a diagnostic screening clue for NIDDM [4-8].

Cherry angioma (senile angioma, Campbell de Morgan, CA) is a common vascular neoplasm that usually develops after the third decade of life. It consists of benign proliferation of dilated capillaries and post-capillary venules within the papillary dermis. Early lesions appear as red macules, evolving to red-purplish papules after a few months. They are usually asymptomatic, but bleeding can seldom occur due to trauma. The most common sites of involvement are the torso and extremities. The incidence of CA in children is extremely low (2%); on the contrary, half of adults over 40 have at least one CA lesion [9-11]. The pathogenesis is not well understood, but factors including genetic background, tropical climates, aging, hormonal effects (hyperprolactinemia and pregnancy), immune suppression due to cyclosporine, liver transplantation, graft versus host disease (GVHD), viral etiology (human herpes virus 8), chemical exposure (mustard gas, bromide, and 2-butoxyethanol), and malignancy (lymphoproliferative neoplasm and skin tumors) have been proposed. Subjects with CA have increased mast cells, which can lead to the proliferation of vessels and development of CA due to the primary release of angiogenic markers or degradation of connective tissues [10,12,13].

Recent research indicates the association of CA with metabolic syndrome and fatty liver. A few studies demonstrate an increased prevalence of CA lesions in NIDDM [9,10,12,13]. This study evaluated the prevalence of CA in patients with NIDDM compared to healthy adults.

METHODS

Exclusion criteria were type I diabetes mellitus, immunosuppression, pregnancy, lactation, smoking, dialysis, malignancy, or use of certain drugs (including hormonal drugs, retinoids, cyclosporine or corticosteroids). Subjects were selected based on simple randomization. After obtaining written informed consent, the demographic features of the participants (age, sex, body mass index [BMI], weight, and height) and the location and number of the lesions were recorded. NIDDM was diagnosed according to American Diabetes Association guidelines [14].

Data were analyzed by SPSS 16 (software IBM, Armonk, NY, USA). Mean ± standard deviation and frequency were used for quantitative analysis. The chi-squared test and independent t-test were utilized for qualitative and quantitative analyses, respectively.

Ethical considerations

Participation in this study was voluntary. Informed consent was obtained from all participants. The Ethics Committee of Kerman University of Medical Sciences approved the study protocol (IR.KMU.REC.1397.319).

RESULTS

Among the 200 participants in the two groups, the mean age of the patients in diabetes and control groups was 47.24 ± 9.3 and 42.58 ± 8.9 years, respectively. Most of the participants were females (61%). There was no significant difference in participants' demographic features (age, gender and height) between the two groups. However, higher BMI and weight were noted in the patients than in the controls (Table 1).

There was no significant difference between the two groups regarding the location of the lesions (Table 1). CA lesions were more prevalent in the diabetic group (47%) than in the healthy group (30%), which was statistically significant ($P = 0.013$). CA lesions were significantly more prevalent in females than males in the diabetes group ($P = 0.042$). The number of CA increased parallel to aging in both groups, reaching statistical significance only in the diabetes group ($P = 0.004$) (Table 2).

DISCUSSION

In this study, CA was more common in the NIDDM group (47%) than in healthy adults (30%), and more lesions were observed on the trunk and extremities than head and neck, compatible with prior studies [15-17].

Arora *et al.*, similar to the present study, demonstrated a higher prevalence of CA in patients with diabetes (44.8%) than in controls (40%), but the difference was not statistically significant [11]. Likewise, in two other studies in India, CA was significantly more prevalent in the diabetes group than in controls (13.25 vs. 3% and 9.33 vs. 3.33%, respectively) [15,16]. Moreover, Farchshian *et al.* reported a higher prevalence of CA in NIDDM patients (14.9%) than in those with insulin-dependent diabetes (4.3%) [17].

Table 1. Demographic features of patients and site of cherry angioma lesions in both groups

Variables	Patients	Controls	*P*-value
Sex (number)			
Male	35	41	0.43
Female	65	59	
Age (years)			
30-40	32	52	0.54
40-50	24	28	
50-60	44	20	
Weight (kg)	77.69 ± 16.23	68.86 ± 15.40	0.001
Height (cm)	165.82 ± 10.03	166.71 ± 10.33	0.543
Body mass index (kg/m^2)	28.07 ± 4.29	24.72 ± 4.76	0.001
Site of lesions			
Head and neck	0.34 ± 0.08	0.19 ± 0.1	0.285
Trunk	1.62 ± 0.24	1.51 ± 0.32	0.788
Extremities	0.54 ± 0.12	0.39 ± 0.18	0.499

Table 2. Frequency of cherry angioma in both groups based on the demographic features of the participants

Group	Variable	Number of lesions Mean ± SD	*P*-value
Patients	Sex		
	Male	1.57 ± 0.52	0.042
	Female	3.06 ± 0.49	
Controls	Sex		
	Male	2.45 ± 0.79	0.679
	Female	2.0 ± 0.71	
Patients	Age group (years)		
	30-40	0.81 ± 0.31	
	40-50	3.0 ± 0.84	0.004
	50-60	3.55 ± 0.62	
Controls	Age group (years)		
	30-40	0.92 ± 0.31	
	40-50	2.71 ± 1.33	0.23
	50-60	4.6 ± 1.52	

To date, the pathogenesis of the development of CA is not completely understood. Abnormal activity of carbonic anhydride enzyme has been proposed in the pathogenesis of CA in patients with diabetes. Moreover, it has been revealed that insulin resistance, increased level of insulin growth factor1 (IGF-1) and glycosylation of endothelial cells in the basement membrane of blood vessels in diabetic patients can lead to atherosclerosis, microangiopathy and increased levels of angiogenic factors (e.g., vascular endothelial growth factor), vascular proliferation, and development of CA lesions [9,12,13]. Based on the result of a previous study, obesity does not affect the number of CAs [18]. Thus, our greater number of participants with a higher BMI in the diabetes group than in the healthy group probably had no confounding effect on the results.

In the present study, more CA lesions were observed with increased age in both groups; nevertheless, the result was only significant in the diabetes group ($P = 0.004$). Darjani *et al.*, in Iran, demonstrated significantly greater numbers of CA with aging ($P = 0.002$), compatible with the present study [9]. Likewise, Borghiet *et al.* demonstrated significantly higher development of eruptive CA (more than 30 lesions) in elderly patients compared to younger patients [10]. It has been revealed that aging can be related to atherosclerosis in the microvasculature. This can lead to dysfunction of endothelial cells and secondary release of angiogenic markers from endothelial cells, proliferation of blood vessels, and development of CA.

In the present study, the number of CA lesions was significantly higher in females with diabetes than in males ($P = 0.042$). In contrast, Jahan *et al.* reported no relation between the number of CA lesions and gender. In that study, CA lesions were only observed in 1.3% of patients. Thus, this could be the reason for the insignificant result [8]. In addition, Borghi *et al.* reported significantly higher numbers of CA in males compared to females, contrasting with the present study [10]. In the mentioned study, males were significantly older than females. Therefore, this can explain the higher number of CAs in males [10]. To date, the exact effect of gender on the development of CA has not been elucidated. Previous studies have demonstrated that hormonal changes such as pregnancy and hyperprolactinemia can have a possible role in the pathogenesis of CA [19].

CONCLUSION

The present study observed significantly more CA lesions in NIDDM patients than in healthy controls. Furthermore, the number of CA lesions was significantly higher in females and elderly patients with NIDDM.

Author contributions

A.M., R.A., M. K., Z.R., and M.A. contributed to the study conception and design. Material preparation and data collection were performed by N.NS, Ab.M., and S.M. The acquisition, analysis and interpretation of data for the work were performed by M.A. and A.M. The first draft of the manuscript was written by A.M. and M.A. All authors revised the manuscript and approved the final version.

Acknowledgement

None

Funding source

None

Conflict of interest: None declared.

REFERENNCES

1. Haghdoost AA, RezazadehKermani M, Sadghirad B, et al. Prevalence of type 2 diabetes in the Islamic Republic of Iran: systematic review and meta-analysis. East Mediterr Health J. 2009;15 (3): 591-599.
2. Valizadeh R, Vali L, Bahaadinbeigy K, et al. The challenges of Iran's type 2 diabetes prevention and control program. Int J Prev Med. 2019;10(1):175.
3. Rashedi V, Asadi-Lari M, Delbari A, et al. Prevalence of diabetes type 2 in older adults: findings from a large population-based survey in Tehran, Iran (Urban HEART-2). Diabetes Metab Syndr: Clin Res Rev. 2017;11:S347-50.
4. Niaz F, Bashir F, Shams N, et al. Cutaneous manifestations of diabetes mellitus type 2: prevalence and association with glycemic control. J Pakistan Assoc Dermatol. 2016;26(1):4-11.
5. Ahmed K, Muhammad Z, Qayum I. Prevalence of cutaneous manifestations of diabetes mellitus. J Ayub Med Coll Abbottabad. 2009;21(2):76-9.
6. Goyal A, Raina S, Kaushal SS, et al. Pattern of cutaneous manifestations in diabetes mellitus. Indian J Dermatol. 2010;55(1):39.
7. Baloch GH, Memon NM, Devrajani BR, et al. Cutaneous manifestations of type-II diabetes mellitus. J Liaquat Uni Med Health Sci. 2008;7(2):67-70.
8. Jahan F, Choubey P, Ghosh A, et al. Spectrum of mucocutaneous manifestations of diabetes mellitus in Jharkhand. J Pakistan Assoc Dermatol. 2018;28(2):207-13.
9. Darjani A, Rafiei R, Shafaei S, et al. Evaluation of lipid profile in patients with cherry angioma: a case-control study in Guilan, Iran. Dermatol Res Pract. 2018;2018: 4639248.
10. Borghi A, Minghetti S, Battaglia Y, et al. Predisposing factors for eruptive cherry angiomas: new insights from an observational study. Int J Dermatol. 2016;55(11): e598-600.
11. Arora AK, Kalsy J, Kapoor SS. Comparative study of campbell de morgan spots in the diabetics and the non-diabetics. Int J Appl Biol Pharm. 2011:347-51.
12. Lause M, Kamboj A, Faith EF. Dermatologic manifestations of endocrine disorders. Transl Pediatr. 2017;6(4):300-12.
13. Navabi J, Beiranvand B, Goudarzi M, et al. Cherry angioma has acceptable diagnostic value for nonalcoholic fatty liver disease: Diagnosis of fatty liver by cherry angioma. Basic Clin Cancer Res. 2015;7(4):18-3.
14. American Diabetes Association. 2. Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes-2021. Diabetes Care. 2015;38(suppl):S8–S16.
15. Girisha BS, Viswanathan N. Comparison of cutaneous manifestations of diabetic with nondiabetic patients: a case-control study. Clin Dermatol Rev. 2017;1(1):9-14.
16. Bhat YJ, Gupta V, Kudyar RP. Cutaneous manifestations of diabetes mellitus. Int J Diab Dev Ctries. 2006;26(4):153.
17. Farshchian M, Farshchian M, Fereydoonnejad M, et al. Cutaneous manifestations of diabetes mellitus: a case series. Cutis. 2010;86:31-5.
18. García-Hidalgo L, Orozco-Topete R, Gonzalez-Barranco J, et al. Dermatoses in 156 obese adults. Obes Res. 1999;7(3):299-302.
19. Askari N, Vaez-Mahdavi MR, Moaiedmohseni S, et al. Association of chemokines and prolactin with cherry angioma in a sulfur mustard exposed population—Sardasht-Iran cohort study. Int Immunopharmacol. 2013;17(3):991-5.