

Can a diabetic foot be malignant?

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Abstract

Diabetes has been linked with malignancies like colon, rectum, liver, biliary tract, pancreas, kidney, leukaemia and melanoma. Melanoma can sometimes manifest as a diabetic foot ulcer. We describe an elderly male with Type 2 diabetes, who had presented to us with a non-healing wound at the right heel, that later turned out to be an invasive malignant melanoma.

Keywords: Diabetes, Diabetic foot ulcer (DFU), Melanoma.

Introduction

Lower limb ulcers in diabetes are far more frequent than non-diabetics. They are usually due to peripheral neuropathy, angiopathy and infections.¹ Plantar ulceration is frequent in diabetic patients because small lesions developing with high pressure or trauma go unnoticed due to diabetic sensorial neuropathy and with time transform into diabetic foot ulcers with microangiopathic ischaemia.¹ A recent large cohort study found that cancers of colon, rectum, liver, biliary tract, pancreas, kidney, leukaemia, and melanoma are significantly elevated among men with diabetes.² In 1985, O'Mara et al,³ noted a raised risk of melanoma and non-melanoma skin cancers in women with diabetes. Malignant melanoma accounts for 4% of skin cancers, and 80% of deaths due to skin cancers.⁴

Case Report

A 67 years old Saudi male with Type 2 diabetes for 9 years and hypertension, presented to the foot clinic of our University Diabetes centre in October 2012 with a non-healing, painful, right heel ulcer, for 9 months before the presentation. According to the patient there was no preceding foot trauma and he was receiving regular and optimum wound care before, without satisfactory results. He was retired, a non-smoker and led a sedentary lifestyle. He was on Gliclazide 80mg BD, Metformin 500mg BD and an unknown antihypertensive.

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Figure-1: Showing a non-healed, bleeding ulcer, on right heel (Grade 2B-University of Texas).

On examination our patient was alert, well-oriented, cooperative and comfortable. He was of average built and height and haemodynamically stable. Weight was 78 kgs. Pallor, jaundice, cyanosis, oedema were absent. There was no lymphadenopathy, thyroid was not enlarged. JVP was not raised.

The gross systemic examination related to cardio-respiratory, gastro-intestinal, genito-urinary systems was quite unremarkable.

The podiatric exam revealed a roundish hyperpigmented, bleeding ulcer (2x2cms) with macerated edges at the lateral border of the heel of right foot (Grade 2B University of Texas) (Figure-1). It was tender, malodorous and discharging and was associated with right leg oedema and redness. The hair in the legs were scanty and toe nails were dystrophic. The big toe showed a hallux limitus deformity. The patient was found to be wearing ill-fitted shoes. Both the dorsalis pedis and posterior tibial pulses were faintly palpable bilaterally. The ankle-brachial indices and toe pressures were normal on both sides (ABI-L/R, 1.13 vs 1.10, toe pressures L/R, 76/77mmHg). There was loss of protective sensations in both the feet {Neurology Disability Score (NDS) < 6/10, Vibration Perception Threshold (VPT) (L/R) > 30 vibration units}.

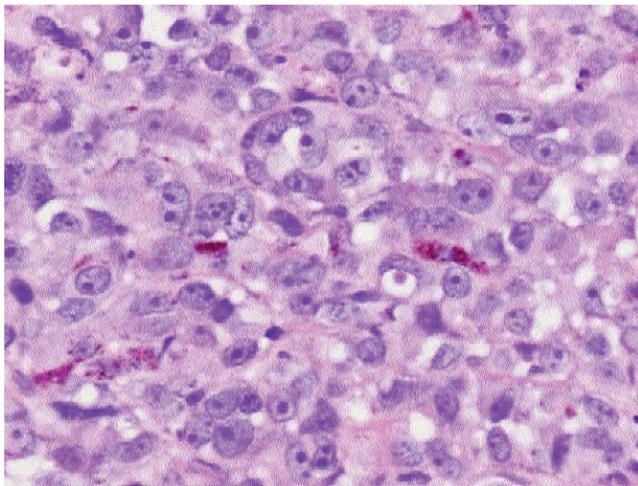


Figure-2: Light microscope section of foot skin with malignant melanoma, showing proliferation of highly anaplastic melanocytes with bizarre, large vesicular nuclei and prominent, irregular nucleoli. Focal deposition.

His HbA1c was 8.7%. All the baseline investigations, including X-rays feet were inconclusive. The patient underwent multiple punch biopsies of the affected skin that were reported as Invasive Malignant Melanoma (epidermal ulcer, with 3mm Breslow thickness) (Figure-2).

Our patient was finally referred to the plastic surgeon, who did a complete excision of the heel lesion, along with removal of the regional lymph nodes and skin grafting. He had a complete recovery after skin grafting. He is being followed up in the foot clinic of our center and in the plastic surgery OPD simultaneously.

Discussion

Diabetic foot may present as an ulceration, infection and destruction of tissue below the ankle in people with accompanying neuropathy and atherosclerosis (International Working Group on the Diabetic Foot/Consultative Section of the IDF, 2007).⁵ Ulceration and infection are the most common presentations.⁶

Our patient had an atypical lesion. Firstly, it was at the heel which is not the usual site of neuro-ischaemic ulcers. Secondly, it was painful and haemorrhagic. Thirdly, it was non-healing and resistant to all sort of measures e.g. antibiotics, off-loading.

Only 4% of all malignant skin lesions are melanoma; however, melanoma carries a high mortality of 80%.⁶ Melanoma is rare but potentially lethal type of skin cancer. Upto 15% of all cases are found on the foot and the prognosis for this location is worse. Thick lesions on the feet also hold a worse prognosis than tumours of equal

thickness at different locations. The prognosis worsens even further with the increasing thickness of the tumour according to Breslow scale.⁷ The plantar surface of the foot is more common location mimicking neuropathic ulceration as it is often amelanotic and may also lack other typical clinical features of malignant melanoma.⁷

Diabetes increases the risk of melanoma, especially in women.⁶ A correlation has been shown between the presence of glycation products and their receptors and the incidence of melanoma and its metastases.⁶ The association between diabetes after diagnosis and the risk of non-melanoma skin malignancy has been demonstrated by Ragozzino et al in 1982.⁸ Afterwards in 1985, O'Mara et al found out that females with diabetes were more predisposed to non-melanoma skin cancer.⁸ In 1987 the scientists⁸ discovered that postmenopausal, diabetic women had a statistically significant risk of developing melanoma. But in 2005 the studies reported reduced non-melanoma incidence amongst patients with type 2 diabetes using insulin. Rousseau, Parent, Pollak, and Siemiatycki in 2006 noted a strong relationship between diabetes and liver cancer in Canadian men, but no association between diabetes and melanoma was found.⁸

Diagnosis of foot lesions may also be delayed because feet are not examined frequently enough, even in people with diabetes. In a study⁹ of 27 cases of foot melanoma in general population the average time from presentation of the patient, to correct diagnosis was around 13.5 months.

An ABCD(E) system⁶ has been proposed for the early diagnosis of melanoma, where A stands for asymmetry, B for irregular borders, C for irregular pigment distribution and D for a diameter of >5 mm or rapid growth (Dynamic); E is occasionally used to describe elevation of the lesion, as described by Garbe et al in 2008.⁶ Bristow et al,¹⁰ have developed the "CUBED" acronym for diagnosing foot melanoma (as an alternative to widely used ABCDE acronym) which includes five features. The authors had suggested that any patient with any two of them should be referred for biopsy.

Recommendations

Foot problem in diabetes should never be underestimated. A chronic, non-healing ulcer in a diabetic foot should be taken seriously.

Biopsy is necessary to rule out a malignancy like malignant melanoma, which has a high mortality.¹ A low threshold for foot biopsy should be kept for an atypical, non-healing ulcer esp. in the absence of neuropathy and vasculopathy.

Delay in diagnosis may lead to the spread of lesions, or limb amputations in case of distal vascular changes.⁶

Conclusion

We can appreciate from this case that melanomas on the foot can initially resemble a diabetic foot ulcer (DFU). When seen initially at the primary care they can appear relatively benign, compared to that seen at the foot clinic later on. That's why a high index of suspicion for melanoma is necessary in an atypical, non-healing diabetic foot ulcer. Whenever a DFU behaves atypically and when there are no other plausible causes, quick referral for skin biopsy should be done.

Disclaimer: Yes the patient's case was displayed as a poster in Endo-2015 meeting in San-Diego, USA.

Conflict of Interest: None.

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