Case report: Squamous cell carcinoma or diabetic foot ulcer?

Kaye McIntyre, Paul Goodfellow, Ivan Bristow

Squamous cell carcinoma (SCC) is a common skin tumour that rarely affects the foot. A case of an older woman with type 2 diabetes who was initially diagnosed with a diabetic foot ulcer is presented and the implications of this case are discussed.

A 77-year-old woman with type 2 diabetes of 12 years’ duration presented with a nonhealing ulcer on her left posterior heel (see Box 1 for baseline characteristics). The lesion had been present for 8 months prior to the referral, it measured $10\text{ mm} \times 10\text{ mm}$ and was covered in an overlying hyperkeratosis. The lesion had been managed by the patient and her family; however, she started experiencing pain and sought advice, and was subsequently referred to the diabetes specialist podiatrists at Monklands Hospital.

A full neurovascular assessment revealed that the patient had neither vascular nor neurological deficits. A 10-g monofilament was applied to five areas on each foot with no negative results. The lady could distinguish between the sharp and blunt end of a Neurotip on the apices of her first digits, the dorsalis pedis and posterior tibial pulses on each foot were readily palpable. She did not recall any trauma to her foot prior to the development of the ulcer. An X-ray of the foot revealed an asymptomatic plantar calcaneal spur, however, this was not at the wound site and was not treated.

Initially, the case was managed by pressure relief as it was thought that the counter of her shoe was irritating the lesion and delaying its resolution. Trauma shoes were issued along with deflective padding and dressings which immediately afforded some relief. The woman was also issued with a heel-lift suspension boot to reduce pressure on the heel at night. She was relatively inactive and therefore any irritation to the wound from walking around was minimal and she was advised not to wear the court shoes she had previously worn.

At her follow up appointment, despite offloading the lesion, there was no improvement in the wound despite its superficial appearance. A swab and bloods were taken to rule out the possibility of deeper infection. The swab results showed a heavy growth of *Staphylococcus aureus* and therefore flucloxacillin (500 mg) was prescribed. The antibiotics were considered appropriate despite there being no signs of clinical infection because the wound was nonhealing and was now of 9 months’ duration (O’Meara et al, 2006).

The woman became unwell 3–4 days after commencing antibiotic therapy and was vomiting, febrile and had high blood glucose levels (17.8 mmol/L). Her GP switched her to erythromycin (500 mg four times a day).

At week 10, despite the antibiotics, the ulcer had enlarged slightly and still showed no signs of improvement. A heel relief boot was issued.
to improve the pressure relief and the foot was X-rayed again but showed no change.

Following discussions with podiatric colleagues at a case conference, the woman was referred to the dermatology department and a biopsy of the lesion was requested (Figure 1). This was carried out 12 weeks following the initial presentation and the results confirmed a squamous cell carcinoma (SCC) in situ (Figure 2). The woman was subsequently seen by the plastic surgery team and underwent an excision of the lesion with 1-cm margins (Figure 3). Following surgery the wound completely healed.

Discussion

SCC is a malignant neoplasm arising from the keratinocytes of the epidermis and contiguous mucous membranes. Although SCC is the second most common skin tumour in humans, there is a very low rate of occurrence in the foot (Ozçelik et al, 2004). Typically, SCCs are seen in elderly populations aged over 50–60 years and its aetiology is thought to be due to chronic ultra-violet A/ultra-violet B exposure – hence, they are rarely found on the foot. However, in unexposed sites a history of chronic inflammation can often be identified (Levene, 1958). In this individual, chronic rubbing from footwear could have played a part.

A definitive diagnosis of SCC can only be confirmed by biopsy. It is normally treated without the need for lymphadenectomy if the lymph nodes are found to be spared at the time of diagnosis. Metastatic disease develops in less than 2 % of cases of SCC; however, tumours arising on skin not damaged by the sun tend to be more aggressive (Schroven et al, 1996).

There were a number of similarities between this case and that reported by Kong et al (2005). Both Kong et al’s study and the present care, suggest that individuals with suspected diabetic foot ulcer had no significant vascular or neuropathic deficits, no history of particular trauma to the area, no foreign body present, and no overt infection to explain the delayed healing. The authors agree with Kong et al’s findings that, in these circumstances, another possible cause should be considered and the wound should be biopsied.

Conclusion

Foot ulceration is a common problem in people with diabetes, however, the squamous cell carcinoma is not. Despite its rarity, it is important to be vigilant and make an early diagnosis for any nonhealing foot lesion. Careful assessment can often reveal the clues: in this case the fact that the patient had no vascular or neurological deficits should have alerted the clinician to consider other possible causes of ulceration. Furthermore, by assessing the response to treatment (e.g. unresponsive to antibiotics), clues may arise to suggest misdiagnosis. Referring the patient on, or seeking a second opinion, should always be considered if the diagnosis is in doubt, which, in this case, was paramount to establishing the correct diagnosis.

This case study highlights the need for all nonhealing wounds to be viewed with suspicion. In the authors’ opinion, any wound that does not heal or breaks down recurrently despite adequate pressure relief and appropriate wound care – in the absence of neuropathic and vascular complications – should be biopsied. Early diagnosis can reduce the need for extensive reconstructive surgery, amputation, or prevent loss of life.