Unusual association of diseases/symptoms

Palm oil thorn-induced squamous cell carcinoma with underlying burns scar

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Summary

Marjolin's ulcers are malignancies that arise from previously traumatised, chronically inflamed or scarred skin. We present a case with childhood burns, who had repeated irritation of his forearm skin with palm oil thorns that eventually led to malignant change.

BACKGROUND

Marjolin's ulcers are malignancies that arise from previously traumatised, chronically inflamed or scarred skin.¹ There are many publications in the literature associating burn scars with malignant change. However, the entity may be overlooked easily if we presume that all neoplasms arise in the background of burn injuries are merely a known complication of scarred wound. We report an interesting case where a retired palm oil estate worker who developed Marjolin's ulcer only on one of his many burn scars as a result of repeated palm oil torn injury over the forearm.

CASE PRESENTATION

A 62-year-old Indian man, who is a retired palm oil estate worker, presented at our hospital with a chief complaint of chronic recurrent, painful non-healing ulcers over his right forearm for the past 7 years.

When he was 3-months old, he had suffered 26% third degree burns involving his right neck, upper chest, both arms and right thigh. He was admitted to the ward for 2 years and 11 months and was on regular follow-up and dressing up to the age of 12.

Seven years ago, the patient presented with a small swelling over his right forearm after repeatedly poked by the oil palm fruit at work. It initially began as a small 'pea-sized' macular papular swelling over the right medial third of his forearm. He treated it himself by puncturing the swelling with a sharp object and it yield pus and blood. He subsequently developed another two similar swellings of similar size and character over the same area. As he did not have any other debilitating symptoms, he did not seek medical help and treatment. These swellings subsequently were resolved by similar treatment.

Six months later, he noticed that the swellings has recurred and were increasing in size. They began over the same area, but gradually extended towards the lateral part of his right forearm. This time it was associated with excruciating pain (9/10 visual analogue pain score) that was aggravated by movement. There were no other neurological symptoms at that time. The pain was debilitating enough to warrant admission and treatment at a district hospital where it was diagnosed and treated as an abscess.

Incision and drainage were done and he was discharged with antibiotics, analgesics and he was on daily dressing.

Despite regular follow-up and daily dressing for 2 years, the wound did not heal but instead increased in size from 5×6 to 6×8 cm. He was thus referred to a local covering hospital for further investigation and management.

An incisional biopsy was done and the histopathological study confirmed the presence of squamous cell carcinoma. He had his second operation done whereby a wider margin of the tumour was removed and primary closure was done. He suffered a wound breakdown a month later and, despite his initial diagnosis, was placed on daily dressing but the wound persisted for another 3 years after which he was referred to our centre because of the increasing pain and development of two new ulcers over the similar area within a short span of a month.

When he presented to us, there were three painful, foul smelling ulcers located at the distal third of his right forearm. He complains of the occasional purulent, bloody discharge but what was more incapacitating was the persistent non-resolving deep boring pain aggravated by movement. It was so severe that he had difficulty in using his right upper limb carry out his activity of daily living such as riding a motorbike. He also experienced numbness over his right anterior forearm up to his fingers. He also had constitutional symptoms such as loss of appetite and loss of weight, whereby he lost 5 kg in the past 6 months.

Examination of the right forearm revealed three main ulcers located at the anterior aspect of right forearm (volar aspect). The two are located at the proximal third of forearm, measuring of 5×3 and 4×2 cm, respectively, in size. Another one is located at the distal third of the right forearm measuring of 5×2 cm in size. These ulcers have irregular margins, everted edges with slough and necrotic and ischaemic tissue seen at the base of ulcers. There was also some active bleeding over the ulcer margin and floor. The depth of ulcers is about 1–2 mm. The surrounding skin was red and indurated. However, there were no trophic changes (figure 1).

On palpation, there was increased warmth over the area of ulcers. The ulcers were tender and friable. Consistency of the surrounding area was hard. The base of the ulcers was hard and irregular.

Figure 1 Preoperative picture of the forearm.

Neurological examination revealed reduced sensation over the area of right forearm compare with the left side. Besides that, he also had reduced sensation over the median, radial and ulnar distribution of the fingers and hand (right hand and fingers). The median and radial nerves are more affected compared with the ulnar nerve distribution of the right hand and fingers.

Motor power of the right hand and fingers was also reduced when compared with the left hand and fingers. Wrist extension and flexion of the right upper limb were grade 4. Hand grip, pincer grip and fingers abduction were all reduced (grade 4—compare with the left side of hand and fingers). Local vascular examinations were unremarkable.

All other cardiovascular, respiratory and abdomen examinations were unremarkable. There was no regional lymphadenopathy.

Postoperatively, the patient had no complications and was discharged with follow-up to the clinic on day 2 postoperation.

He has been on our follow-up ever since. No adjuvant treatment was given. His latest follow-up is 18 months after the last resection and there is no evidence of recurrence of the disease (figure 2).

INVESTIGATIONS

All blood investigations including full blood count, liver enzymes and renal profile are normal. An incisional

Figure 2 Postoperative picture of the forearm after 18 months.

biopsy was done and the histopathological examination confirmed the presence of squamous cell carcinoma.

TREATMENT

We proceed with wide excision and split skin grafting.

OUTCOME AND FOLLOW-UP

Postoperatively, the patient was uneventful and discharged with follow-up to the clinic on day 2 postoperation.

He has been on our follow-up ever since. No adjuvant treatment was given. His latest follow-up is 18 months after the last resection and there is no evidence of recurrence of the disease (figure 2).

DISCUSSION

There are a few interesting, yet easily overlooked points of discussion in this case report. This includes the recognition of the importance of proper socioeconomic and medical history that leads to an accurate and early diagnosis, the possibility of confounding occupational hazards in a patient who already is at the risk of Marjolin's ulcer (malignant ulcer formation) and timely surgical intervention that can greatly reduce the morbidity of patients.

Marjolin's ulcer represents a malignant transformation that arises from chronically traumatised¹ and cutaneous scars.² It has already been postulated in the 1930s, that a compromise in vascularity coupled with areas of disrupted epithelial integrity creates an increased susceptibility of non-healing chronic wounds to carcinogenic transformation.³ Dvork⁴ had proposed that prolonged cellular attempts at wound healing parallels the generation of tumour stroma and that the development of cellular atypia in the wound-healing process might lead to malignancy. It has been widely believed that chronic irritation of wounds also leads to malignancy.^{5 6} It has been hypothesised that the lag period between the onset of malignancy and the age at the time of burns is inversely proportional.⁷ Hence, younger burns patients tend to develop malignancy after a longer period of time.⁸ Our patient suffered from childhood burns that predispose him to the development of Marjolin's ulcer, perhaps in keeping with that theory as he only developed carcinoma 55 years later.

The chronicity of irritation to wounds leading to malignant transformation brings us to our next point. Palm oil estate workers usually work in remote and secluded areas. The job itself predisposes them to multiple, often superficial injuries from thorns arising from the palm oil fruit. They are frequently considered to be of a lower socioeconomic standing and hence have limited access to proper healthcare and more importantly, the right level of care that they require. It has been considered that Marjolin's ulcer seemed to have a predilection for disadvantaged patients who has limited access to healthcare which results in burns and other wounds often being neglected.⁹ It has also been recognised that the majority of reported cases of Marjolin's ulcer come from developing countries whereby the tendency for delayed presentation is greater.¹⁰ This man having worked in a palm oil estate for the greater parts of his life is also right handed. He worked as a manual labourer who whose duties involved handling of the palm oil fruit and loading it onto a transporter. During this process he is predisposed to multiple injuries especially over his dominant upper limb which fits in to our hypothesis that chronic irritation from his occupation predisposes him to an increased risk of malignant skin cancer.

It has not been widely recognised, but the thorn of palm oil trees can produce a persistent and progressive reaction in the surrounding soft tissue down to the joints and even to the bone.¹¹ These local tissue reactions are usually disproportionate to the size of the thorn and it has been suggested that certain 'toxins' released by the palm oil thorn might be the causative agent.¹¹ Giblin *et al.*¹² suggested that chronic trauma with repeated re-epithelialisation in a poorly vascularised area is probably a causative factor for malignant transformation in old burn scars. Our patient had both the risks of burnt scars and chronic trauma that predisposes him to malignancy.

If Marjolin's ulcer has already been suspected, a biopsy is the most important diagnostic procedure and should include central and marginal tissue sampling. Wide surgical excision of at least 2 cm is the most effective treatment for burn scar tumours if the lesion is small and mobile.¹³

In conclusion, a proper history of medical, socioeconomic and knowledge of occupational hazards can lead to more accurate diagnosis, early and proper treatment which significantly reduces the morbidity for patients.

Learning points

- ▶ Chronic irritation of skin can lead to malignant change.
- ▶ Chronic non-healing ulcer must be investigated for malignant transformation.
- ▶ Palm oil thorns can induce intense chronic inflammation.

Competing interests None.

Patient consent Obtained.

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