

MALIGNANCY FOLLOWING A SINGLE INJURY TO THE SKIN

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It is well recognised that malignant change may develop in scar tissue at the site of an old injury or burn. In such cases, there is normally a long interval between the original injury and the development of malignancy in the scar tissue—often an interval of 10-15 years.

Very rarely, the original wound fails to heal and within a relatively short time malignant changes appear.

Over a 9-year period (1969 to 1977) we have seen 5 patients who had the following features in common:

1. There was no known preceding abnormality of the skin;
2. There was an unequivocal history of a single injury to the skin;
3. The wound failed to heal and within 3 months malignant change in the lesion was proved histologically.

There were 3 examples of squamous carcinoma, 1 basal cell carcinoma and 1 malignant melanoma.

CASE REPORTS

Case 1. A 56-year-old miner accidentally drove a piece of wire under his thumb nail whilst at work. The wound did not heal, and 2 months later a fleshy subungual tumour 1.5 cm in diameter was excised. Histologically, this was proved to be a deeply invasive nodular malignant melanoma, without any evidence of a preceding pigmented lesion. The patient died of unrelated causes a year later.

Case 2. A 45-year-old road worker was struck on the right upper eyelid by a piece of asphalt. The resulting small wound failed to heal and 8 weeks later he presented with a rapidly enlarging ulcer of the eyelid (Fig. 1) and a lump in the right side of the neck which had been present for 3 weeks.

Histologically, the lesion of the eyelid was an invasive squamous carcinoma, and the lesion in the neck was a metastatic deposit in a lymph node.

The tumour recurred within 8 weeks at both the primary and metastatic sites, and was found to have invaded the parotid gland. Radiotherapy and chemotherapy had little effect, and the patient died a year later of metastatic carcinoma.

Case 3. A 60-year-old man, a heavy smoker, burned his lower lip on a cigarette. An ulcer developed at the site (Fig. 2) and as it remained unhealed for 2 months it was excised.

Histologically, the lesion was a moderately differentiated invasive squamous carcinoma, arising from the mucosa rather than the epidermis of the lip.

Metastatic deposits in the cervical lymph nodes were excised on 2 occasions. He was tumour-free when last seen 21 months after the initial diagnosis, and was thereafter lost to follow-up.

Case 4. A 62-year-old woman injured her lower lip on a rusty nail just on the cutaneous side of the mucocutaneous junction. She smoked 15 cigarettes daily. The wound failed to

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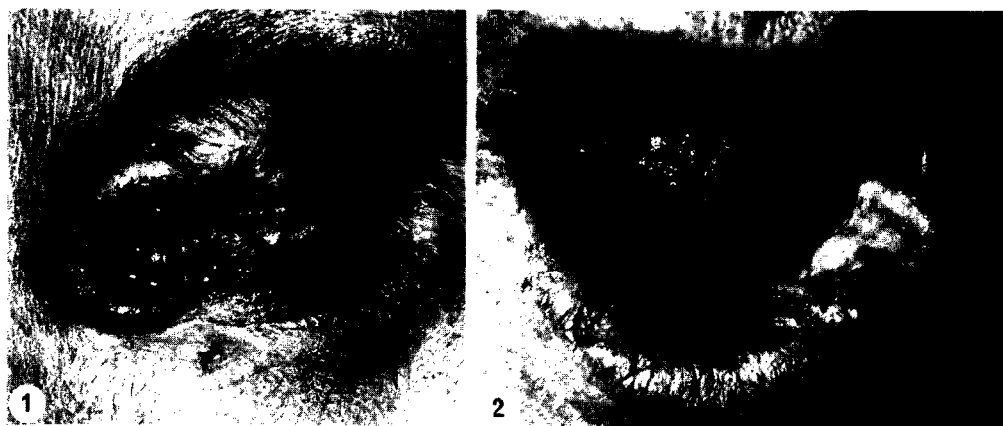


FIG. 1. Case 2. A squamous carcinoma in a right upper eyelid wound caused by a piece of asphalt.

FIG. 2. Case 3. A squamous carcinoma arising in the lower lip at the site of a burn from a cigarette.

heal and 3 months later she presented with an indurated ulcer 1 cm in diameter, which was excised.

Histologically, the lesion was proved to be a basal cell carcinoma, arising from the basal layer of the epidermis and infiltrating all layers of the dermis. The patient was known to be alive and well 18 months later.

Case 5. A 76-year-old man accidentally bruised the bridge of his nose on a clothes pulley. Three days later the skin broke down and a persistent ulcer formed. A biopsy taken 6 weeks later proved the lesion to be a squamous carcinoma, and 1 week later it was excised.

Histologically, it was a moderately differentiated invasive squamous carcinoma, arising from the epidermis. The patient was tumour-free when last seen 5 months later.

DISCUSSION

The cases reported here are all examples of proved malignant change occurring at the site of a single injury to previously normal skin. The original wound failed to heal and the diagnosis in each instance was made within 3 months of the injury. The time-sequence is quite different from that seen in the classical "Marjolin's ulcer", or of malignant change induced by trauma in a pre-existent benign or pre-malignant lesion.

The evidence that a single injury to normal skin can induce malignancy is usually regarded as anecdotal rather than scientific. Reports suggesting such a sequence are invariably viewed with scepticism and suspicion. Among the more obvious sources of fallacy are the difficulty of substantiating the history of trauma in cases where the alleged incident occurred many years before; doubt as to whether the site of the tumour is precisely the same as the site of the injury; the possibility that injury simply drew attention to a tumour that was already present and, in cases of industrial injury, the possibility that the patient's history is consciously or subconsciously influenced by the prospect of financial compensation.

In a balanced review of the relationship between trauma and malignancy Monkman, Orwoll and Ivins (1974) found no evidence that single uncomplicated trauma caused cancer but conceded that trauma might act as a co-carcinogen, especially in cancers of the skin. Chapman and Race (1969), after reviewing the relevant literature of the preceding 10 years, also concluded that a single sharp or blunt physical injury in rare instances could play a definite aetiological role in the production of a malignant tumour.

the physical trauma most likely acting as a co-carcinogen. Similarly, Cobb (1967) suggested that in an environment well endowed with physical and chemical carcinogens, repeated irritation and trauma might well affect the healing process in man and stimulate malignant change.

There are very few well documented reports implicating a recent single injury as a cause of basal cell carcinoma in man (Neuman, Ben-Hur and Shulman, 1963) and no acceptable examples of squamous carcinoma. By contrast the reported association between single trauma and malignant melanoma is more impressive (Lea, 1965). In 4 of the 24 cases recorded by Lewis (1956), as in our case 1, there was no preceding mole or abnormal pigmentation.

In the 5 patients reported in this series, the time interval between injury and the diagnosis of malignant change is remarkably short. Nevertheless, Stoll and Crissey (1962) have stated that the generally accepted minimum time limit for the appearance of a squamous carcinoma, first set by Thiem in 1909, is only 3 weeks. It could be argued that this short interval might imply that pre-malignant or non-invasive malignant change already existed at the injured sites. Our histological findings revealed no such evidence. We report these cases for the record, recognising that we have no basis for any further speculation but simply noting that in each case the patient was emphatic about the previously normal state of the skin, and that within less than 3 months invasive malignant change was confirmed clinically and histologically at the site of the unhealed injury.

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