Superficial skin ulcers: histopathological analysis and review of the literature

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ABSTRACT

Superficial skin ulcers are common clinical problems in the tropics and these pose a major diagnostic challenge to both clinicians and pathologists. The objective of this study is to determine the histological pattern of superficial skin ulcer in our environment. This is a 2-year retrospective histopathological analysis of superficial skin ulcers diagnosed at the Histopathological Unit of Federal Medical Centre, Lokoja, Nigeria, between August 2007 and July 2009. Clinical information and biodata were extracted from histopathology request cards. Histology slides stained with haematoxylin and eosin (H&E) was retrieved. Periodic acid Schiff, Gomori methenamine silver and Ziehl Neelson stains were done for cases of chronic granulomatous inflammation to exclude fungal or mycobacterial infection. A total of 19 cases of superficial skin ulcers were analyzed. The age range was 20-69 years with the mean age of 44.5 years. There were 16 males and 3 females. The peak age frequency was in the third decade (20-29 years). The spectrum of lesions in this analysis was categorized into inflammatory, infections, benign and malignant diseases. A total of 6 (31.5%) cases of granulomatous inflammation, two (10.5%) non-specific inflammation, lobular capillary haemangioma 3 (15.8%) and one (5.3%) intermediate mesenchymal tumour- dermatofibrosarcoma protuberans were found. The most common malignant tumour was squamous cell carcinoma 5 (26.3%); this was followed by one (5.3%) case each of malignant melanoma and basal cell carcinoma. Superficial skin ulcers are common in the tropics and could undergo malignant transformation, if medical intervention is not sought early. So there is need for a high index of suspicion, adequate tissue biopsy and early histopathological diagnosis.

Key words: Superficial skin ulcers, Squamous cell carcinoma, malignant melanoma
INTRODUCTION

The skin is a complex organ with many functions and is exposed to environmental elements, the most important being long time exposure to ultraviolet light, trauma and infections\(^1\). Ulcers can be defined as wounds with complete loss of the epidermis and often portions dermis with subcutaneous fat that has a slow healing tendency\(^2\).

The incidence of ulceration is rising as a result of the ageing population and increased risk factors for atherosclerotic occlusion such as smoking, obesity and diabetes\(^2\).

In general, the slow healing tendency is not simply explained by depth and size, but caused by an underlying pathogenetic factor that needs to be removed to before healing can be induced\(^2\).

The probable causes are exposure to extremes of temperature, venous valve insufficiency and lower extremity arterial disease like atherosclerosis and diabetes. Other less frequent conditions are infections, vasculitis, hypercoagulability, skin malignancies and ulcerating skin diseases such as pyoderma gangrenosum\(^2\).

MATERIALS AND METHODS

This is a 2-year retrospective histopathological analysis of superficial skin ulcers diagnosed in the Histopathological Unit of Federal Medical Centre, Lokoja, Nigeria, between August 2007 and July 2009. Clinical information and biodata were extracted from histopathology request cards.

Histology slides stained with haematoxylin and eosin (H&E) was retrieved. In cases of chronic granulomatous inflammation, Periodic acid schiff and Gomori methenamine silver stains were used to exclude fungal infection, while Ziehl Neelson stain was used to exclude mycobacterial infection.

RESULTS

A total of 19 cases of superficial skin ulcers were analyzed. The age range was 20-69 years with the mean age of 44.5 years. There were 16 males and 3 females. The peak age frequency was in the third decade (20-29 years). The spectrum of lesions in this analysis was categorized into inflammatory, benign and malignant diseases.

A total of 6 (31.5%) cases of granulomatous inflammation were observed; four were confirmed to be mycobacterial tuberculosis and two fungal infections by Gomori methenamine silver stain. There were two (10.2%) cases of non-specific inflammation, three cases (15.8%) of lobular capillary haemangiomas and one (5.2%) mesenchymal tumour of intermediate malignancy- dermatofibrosarcoma protuberance.

The most common malignant lesion was squamous cell carcinoma 5 (26.3%); this was followed by one (5.2%) case each of malignant melanoma and basal cell carcinoma.
DISCUSSION

Various definitions of the term ulcer exist but the two main criteria postulated are involvement of the full thickness of the lining epithelium- epidermis, dermis and portions of subcutaneous tissue; which implies that there are no sources for re-epithelialisation left in the centre of the ulcer, and a slow healing tendency. In most definitions, slow healing is further specified by defining a time frame (present for more than 4 weeks) to separate chronic ulcers from acute wounds. In general, the slow healing tendency is not simply explained by depth and size, but caused by an underlying pathogenetic factor that needs to be removed before healing can be induced. Prevalence numbers (all skin ulcers) range from 1% in the adult population to 3–5% in the population over 65 years of age. In Western countries, the incidence of chronic skin ulcers is rising as a result of the ageing population, and increased risk factors for atherosclerotic occlusion such as smoking, obesity and diabetes.

Nineteen patients were analysed in this study. The age range was between 20-69 years, the mean age was 44.5 years. The peak age frequency was in the third decade (20-29) years. There was male preponderance with the ratio 16:3 (5.1:1). This finding differs from the findings of a study done in Zaria by Samaila et al. Their peak age was in the fifth and sixth decades, but there was male preponderance as was observed in this analysis.

Six (31.5%) of the patients had granulomatous inflammation; four were confirmed to be mycobacterial tuberculosis by Ziehl Neelson’s stain and two fungal infections by Gomori methamine silver stain. Two (10.2%) patients had non-specific chronic inflammation. This differs from a similar study done in Zaria. Though their series had a larger number of patients than ours, they recorded 51% categorized as non-specific lesions (chronic inflammation, granulation tissue and pseudoepitheliomatous hyperplasia).

Three (15.8%) cases of lobular capillary haemangiomas, a benign lobular vascular tumour was observed. These were located in the digits of both right and left hands. One (5.2%) case of dermatofibrosarcoma protuberans, a mesenchymal tumour of intermediate grade malignancy was found. This differs from the findings of studies from Kano and Zaria that recorded 8.8% and 0.6% in their malignant series, though they had large number of patients.

The predominant malignant tumour was squamous cell carcinoma (26.3%), this was followed by a case (5.2%) each of malignant melanoma and basal cell carcinoma. This is in concordance with studies from Nigeria and other parts of Africa where squamous cell carcinoma constituted the largest number of carcinomas seen.

In the past, some of these observed phenomena, such as shunting of blood near ulcers, the fibrin cuff, iron accumulation, white cell accumulation, decreased fibrinolytic activity, binding of transforming growth factor-beta and other growth factors by macromolecules such as fibrin or alpha-macroglobulin; and various inflammatory responses to the vascular damage, were believed to contribute to ulceration. To date, it is still not clear whether they represent causative factors.

Most authors believe that the haemodynamic changes at the microvascular level are sufficient to explain ulceration.

Many factors such as impaired blood supply, jaundice; vascular insufficiency-atherosclerosis, anaemia, macronutrients and micronutrient deficiencies,
immunosuppression, presence of foreign body, bony deformities and diabetes mellitus were among the causes of impaired wound healing\textsuperscript{12} - \textsuperscript{13}. However, some of the co-morbidities mentioned above were not found in our patients.

**CONCLUSION**

In conclusion, superficial skin ulcers may herald an underlying disease in the tropics ranging from benign to malignant diseases. Thus a high index of suspicion, good clinical history, physical examination along with adequate biopsy and up to date knowledge of pathology can help to arrive at a definitive diagnosis.

**COMPETING INTERESTS**

The authors declare no competing interest.

**REFERENCES**


