

Plantar Squamous Cell Carcinoma in a Developing Community

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Abstract

Eighteen cases of plantar squamous cell carcinoma seen in Igbo patients over a thirty year period, from 20th February 1970 to 19th February 2000, are presented. Thirteen males and five females were afflicted, and the average age at presentation was 52 years, (range 25-66 years). The duration of the growth lasted from 3 months to 34 years, and the precursor lesions were injury and leprosy. The left sole was involved more than the right. Plantar squamous cell carcinoma is rare amongst the Igbos of Nigeria.

KEYWORDS:Foot, sole, squamous cell carcinoma, leprosy, Nigeria.

Introduction: Plantar squamous cell carcinoma (SCC) was reported to be rare in the United States¹ from which reference to an Indian publication ran thus: "Primary squamous cell carcinoma in India occurs as frequently on the sole as on face, many plantar lesions are considered induced by burns. The Indian statistics strongly support the traumatic cause, which may have a message for barefoot patients!" Summarizing the African experience of non-melanoma skin cancer, the WHO Scientific Publications² scantily dealt with SCC of the foot, mentioning only a report from the Gold Coast (Ghana) covering the 1942-55 period as regards 24 cases on the lower leg and foot. However, the latter site was not expatiated on let alone its plantar surface. Therefore, this report deals with an African community with special reference to the Ibos or Igbos,³ who constitute one of the three main ethnic groups in Nigeria, West Africa.

Material and methods: During the three decades from 20th February 1970 to 19th February 2000, the senior author, (WO), received surgical specimens at a Reference Pathology Laboratory from several physicians working among the Igbos. The accumulated histopathology data pool provided, as was suggested in the United Kingdom,⁴ sufficient materials for epidemiologic analysis. The search covered cases of plantar squamous cell carcinoma encountered among Igbo patients with special reference to sex, age, hospital, laterality, duration, etiologic factors, and clinical diagnosis.

Results: Table I summarizes the overall findings in which each lesion was a squamous cell carcinoma (SCC). There were 13 males and 5 females, giving M:F ratio of almost 3:1. The ages ranged from 25 years to 66 years with an average of 52 years. The left sole outnumbered the right by a ratio 11:6, i.e., almost 2:1.

The duration of the growth generally lasted long and ranged from 3 months to 34 years. All the lesions became ulcerated by the time of presentation.

Apart from one case diagnosed as a wart and another as a chronic ulcer, the rest were thought on clinical grounds to be malignant. SCC was diagnosed 5 times and melanoma 6 times.

What stood out etiologically was leprosy in 5 men. Two were stated to have been cured. Thus, one of them was discharged in 1954 but was biopsied in 1987. Three still had the disease. Incidentally, all the leprosy cases were biopsied in Specialist Hospitals situated in three towns.

Injury was mentioned by 4 patients. Interestingly, one of them was an aftermath of the lamented Nigerian Civil War (1967-70). In his case, No. 17, there was a huge ulcer 10 cm across, the calcaneum being destroyed.

Fully half of the patients were attended to at Enugu, the erstwhile capital city of the entire Eastern Region of Nigeria. The only Plastic Surgery Department in the whole area is situated in it.

Discussion: Since the clinical data came from the information supplied in the Laboratory Request Forms, positive findings count. In this respect, the mention of leprosy in nearly a third of the series appears etiologically significant. Elsewhere in South Africa⁵ and India,⁶ squamous cell carcinoma (SCC) arising in leprosy patients with chronic neuropathic plantar ulcers have been described. Concerning its management, a WHO publication⁷ was devoted to the prevention of disabilities due to leprosy. And so did the contribution made by Trautman.⁸ Skin care was emphasized including soaking the foot in water and softening it with oil. In this way, SCC due to leprosy ulcers will diminish. This is because trophic ulcers are common in leprosy, but only long standing and neglected ones undergo malignancy.⁹

The time taken for malignant transformation from neuropathic ulceration averages 24.5 years.⁵ One of our patients had been treated for leprosy and was cured, but developed SCC 33 years after. It has been noted that malignant transformation occurs in long standing plantar ulcers,¹⁰ and SCC is thought to be caused by long term, continuous mitotic activity, as the epidermal cells attempt to resurface the open defect.¹¹

SCC is also known to be secondary to a variety of lesions like burn scars, trauma, chronic inflammation, or scarring.¹² Snider and Demuth¹ did refer to the peculiar Indian societal experience of the plantar lesions being induced by burns. This association was not encountered in this community. Rather, four of our patients mentioned injury as their precursor lesion, and in one case the extent of the disease was such that the calcaneum had been damaged. Whereas SCC is treated usually by wide excision with at least a margin of 1 cm of healthy tissue, amputation is the treatment of choice when wide excision is complicated by bony involvement.¹³ Magnetic Resonance Imaging (MRI) is the

radiological investigation that helps to determine the extent of this disease in the surrounding tissue and subjacent bone and therefore helps in surgical planning.¹⁴

Malignant melanoma is a strong differential diagnosis. It was suspected 6 times in this series. Elsewhere,¹⁵ we pointed out that melanoma has a predilection for the foot among Igbo patients. The ulcer may be dirty and deceptively dark. However, when it is cut into, a pearly white growth is seen. It is usually thereafter confirmed histologically as SCC.

Case 3 presented to the clinician as a wart. With such an appearance, could it be the rare verrucous variety¹⁶ reviewed by Kathuria's colleagues and illustrated in Headington's¹⁷ paper? It was not. Snider and Demuth¹ advised that, owing to the rarity of plantar SCC, the physician should not delay by considering only common diagnoses but rather by biopsying all unusual or chronic lesions of the foot. Schoeman⁵ also made a plea for an increased awareness of the possibility of malignant transformation in chronic neuropathic ulcers, in order to effect an early diagnosis of a potentially aggressive cancer. In this community, the delay did not apply to the physicians but to the patients themselves. This necessitates health education therefore.

The place of international cooperation in medical service in the Third World is apparent in this series. Thus, fully half of the physicians who took the trouble to avail themselves of the Regional Laboratory were Caucasian foreigners. Moreover, only one Igbo physician was working in the leprosy service as against four foreigners.

Table I. Summary of findings

| No | Patient | Age | Sex | Town | Side | Duration (Yrs) | Etiology | Clinical Diagnosis |
|----|---------|-----|-----|-----------|------|-------------------|----------|-----------------------|
| 1 | AN | 60 | M | Enugu | L | ¼ | Injury | SCC |
| 2 | AC | 65 | M | Abakiliki | L | 2 | Ulcer | Melanoma |
| 3 | AJ | 46 | M | Enugu | L | 2 | Ulcer | Wart |
| 4 | AS | 41 | M | Enugu | L | 5 | Ulcer | Melanoma |
| 5 | CG | 66 | M | Enugu | R | 10 | Ulcer | Chronic ulcer |
| 6 | EA | 50 | F | Abakiliki | R | 1 | Ulcer | Carcinoma |
| 7 | IF | 65 | M | Oji River | R | Many | Leprosy | Melanoma |
| 8 | IO | 60 | M | Uzuakoli | L | Many | Leprosy | SCC |
| 9 | MF | 60 | M | Enugu | L | 34 | Ulcer | SCC |
| 10 | NI | 50 | M | Abakiliki | L | 20 | Leprosy | SCC |

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|----|----|----|---|-----------|---|----|---------|--------------|
| 11 | NF | 50 | M | Oji River | R | 2 | Leprosy | Malignant |
| 12 | OC | 25 | M | Enugu | L | 15 | Ulcer | Melanoma |
| 13 | OE | 56 | F | Enugu | R | 20 | Ulcer | Rodent ulcer |
| 14 | OE | 60 | M | Uburu | R | ½ | Ulcer | Malignant |
| 15 | OP | 35 | M | Abakiliki | L | 2 | Leprosy | Malignant |
| 16 | OV | 46 | F | Enugu | L | 5 | Injury | Melanoma |
| 17 | UK | 40 | F | Enugu | L | 25 | Injury | SCC |
| 18 | UM | 60 | F | Adazi | R | 18 | Injury | Melanoma |

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