PATHOLOGICAL FRACTURE DUE TO PEMPHIGUS VULGARIS: A CASE REPORT

H. O. Ong'ang'o, MMed(Surg) , MSc Ortho(LONDON), FCS-ECSA, Consultant Orthopaedic and Trauma Surgeon, Orthopaedics Department, Kenyatta National Hospital, and Honorary Lecturer in Orthopaedics, Department of Orthopaedics, University of Nairobi, Nairobi, Kenya and **Rania L. Jones,** 3rd Year Medical Student, University of Nairobi, School of Medicine, Nairobi, Kenya.

Correspondence to: Dr. H. O. Ong'ang'o, P.O.Box 74037-00200 Nairobi, Kenya. Email: herbertongango@yahoo.com

ABSTRACT

Pemphigus vulgaris is a rare but serious autoimmune mucocutaneous bullous disease.The two cardinal pathological processes at work are a split within the epidermis and loss of adhesion of epidermal cells (Acantholysis). It is due to deposition of pathogenic IgG on the Keratinocyte cell surface. The mainstay of treatment is systemic corticosteroids and bone complications have been noted to arise from this treatment. Pathological fracture due to pemphigus vulgaris before commencement of corticosteroid treatment has not been reported before in the world literature.

INTRODUCTION

Pemphigus vulgaris (PV) is a rare but serious autoimmune mucocutaneous bullous disease (1-3). It is due to deposition of pathogenic IgG on the keratinocyte cell surface within the epidermis resulting in the formation of intra-epidermal vesicles and resultant acantholysis. Clinically it manifests as widespread flaccid blisters and crusted erosions. These lesions may occur on any part of the body including scalp, face, trunk and extremities. Usually it affects the middle –aged patient.

It is rare but occurs worldwide, appearing at a mean age of 48 years, though the youngest reported case has been at 3 years. It is pre-dominant in females and its reported incidence is between 0.76-1.8 per 100,000 persons per year (4-7). African countries have reported lower figures, such as Mali 0.29 per 100000 persons per year (2), Tunisia only 6.7 new cases per year (2) while South Africa reported 112 cases in 12 years (3).

Diagnosis of pemphigus vulgaris rests on three facets. First is the clinical presentation, which can affect any part of the body including scalp, face, trunk and extremities. The lesions express themselves as oral ulcers, flaccid blisters or crusted erosions. Next is the histopathological demonstration of supra-basilar acantholysis and intra-epidermal blister formation in biopsy specimen of perilesional skin . The third facet of the diagnosis is immunofluorescence demonstration on skin biopsy (Direct) or serum (Indirect). Enzyme linked Immunosorbent Assay (ELISA) for anti-desmoglein 1 and anti-desmoglein 3 auto antibodies may also be performed (4).

The mainstay of treatment for pemphigus vulgaris is systemic corticosteroids. Topical corticosteroids and sub-lesional corticosteroid injections have a limited role. Immunosuppressive agents such as azathioprine, cyclophosphamide, gold, dapsone and mycophenolate mofetil have an adjunctive role to improve response to corticosteroids and also for their corticosteroid-sparing effect. Intravenous Immunoglobulin (IVIG) have recently come on board as effective though expensive treatment agents . In extremely resistant cases complex combinations of corticosteroids plus either dapsone, or azathioprine, or immunoabsorption, or mycophenolate mofetil, or cyclophosphamide, or rituximab, or IVIG, or plasmapheresis have been used (1).

Bone complications that have been noted in pemphigus vulgaris are osteopenia, osteoporosis and osteonecrosis of the hip (1,8). Notably, these are as a result of the systemic corticosteroid treatment. Control of the disease activity is achieved after variable periods, with drastic improvement in the prognosis from the fatality in the pre-corticosteroid days to the current mortality rate of 6-14% (1,3). Pathological fracture before commencement of corticosteroid treatment in a child with pemphigus vulgaris has not been documented before in the world literature. The purpose of this study is to present one seven year old male patient who sustained a pathological fracture of left tibia due to pemphigus vulgaris before commencement of treatment.

CASE REPORT

A 7 year old African male presented to us in May 2011 with complains of left leg swelling, left leg deformity and pus discharge from the left leg all reported for a duration of one month. His past medical history was elaborate. He had three previous admissions for the same leg. The first admission was in January 2010 at a remote Provincial Hospital with complains of pus discharge from the left leg. This was drained, he underwent daily dressing, and also received antibiotics. Notable was that no X-ray examination was undertaken. Later, the patient was

readmitted in July 2010 at the same remote Provincial Hospital, with complains of pus discharge from the same left leg, and again this was drained, daily dressing performed, antibiotics administered but again no X-ray examination was undertaken. Patient later presented to the Kenyatta National Hospital in November 2010 with complains of pus discharge from the same left leg. At this admission an X-Ray examination was undertaken and was reported to have shown chronic osteomyelitis, for which "sequestrectomy" was performed. Patient absconded treatment in the postoperative period.

Physical examination at the time of the latest admission revealed a swollen and septic looking left leg with multiple sinuses (Figure 1). X-Ray examination revealed a pathological fracture of the left tibia through sclerotic bone with antero-posterior deformity (Figure 2). Pre-operative laboratory workup revealed a haemoglobin level of 13.4g/dl, mean corpuscular volume of 71.5fl (low), white blood cell count of 4.9 $x10^9$/l. The white blood cell differential count was neutrophils 24.8% (reduced), lymphocytes 55.5% (elevated), monocytes 6.97% (normal), eosinophils 11.2% (elevated) and basophils 1.48% (reduced). Blood urea nitrogen, electrolytes and creatinine were all normal.

Surgery was undertaken and this was preceded by meticulous skin preparation (Figures 3-4). At the commencment of the surgery, a skin biopsy was obtained which was submitted for histopathological examination, then we proceeded to perform a corrective osteotomy of the tibia as well as biopsy of the tibial fracture site. A proximal and distal fibular osteotomy was required to enable correction of the antero-posterior tibial deformity. The corrected tibia was then stabilized by a combination of smooth and threaded Kirschner wires (Figure 5) and the whole complex supported in an above knee plaster of paris cylinder cast with a window being cut later (Figure 6).

Figure 1: Left leg showing classical features of Pemphigus vulgaris-Extensive crusting, bullae and erosions

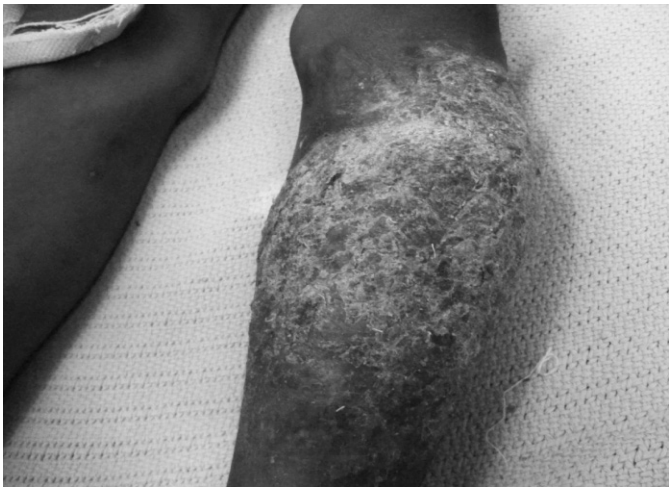


Figure 2: X-ray showing pathological fracture, antero-posterior angulation, sclerotic distal fragment and marked soft tissue swelling. Fracture is incomplete as the posterior tibial cortex is intact.

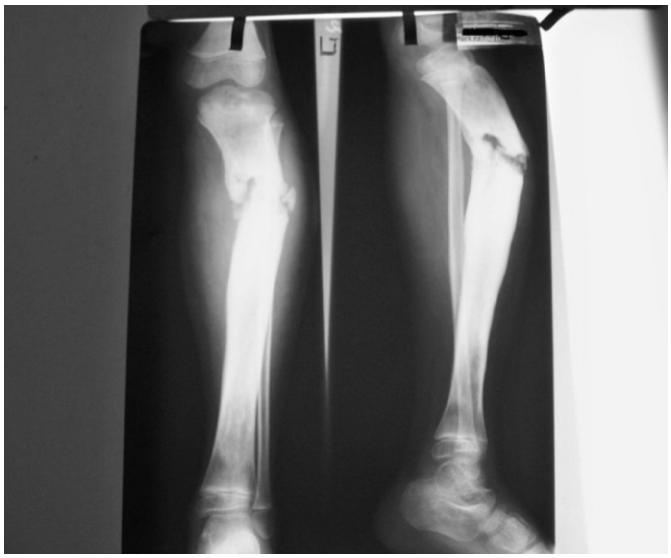


Figure 3: Pre-operative appearance

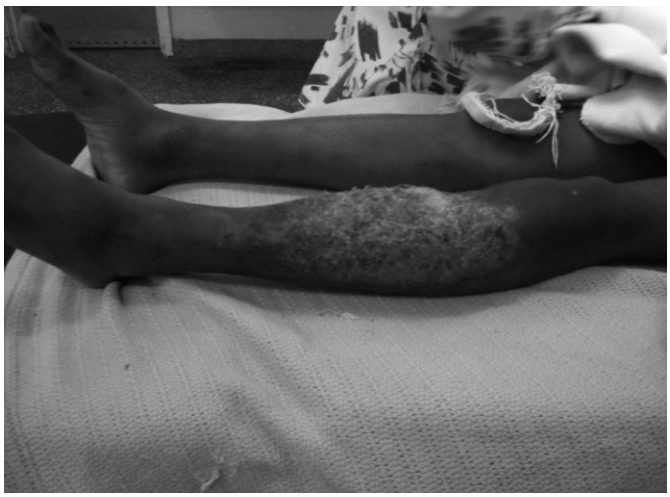


Figure 4: Intra-operative picture: After skin preparation bullae are very distinct

Figure 5: Immediate post –operative picture. Antero-posterior deformity corrected and multiple pin fixation displayed.

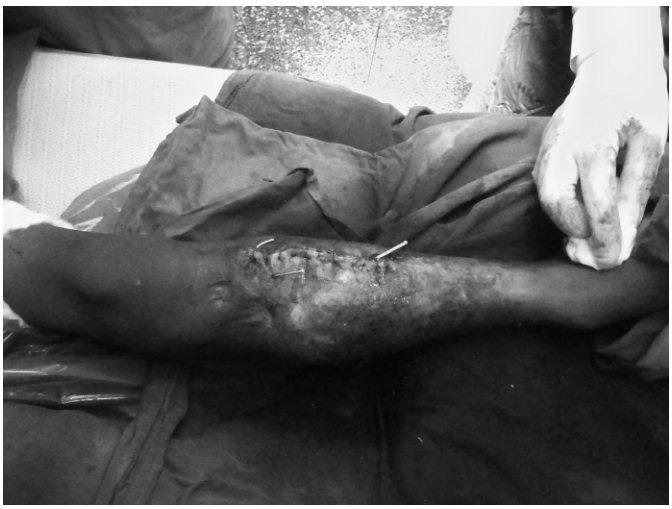
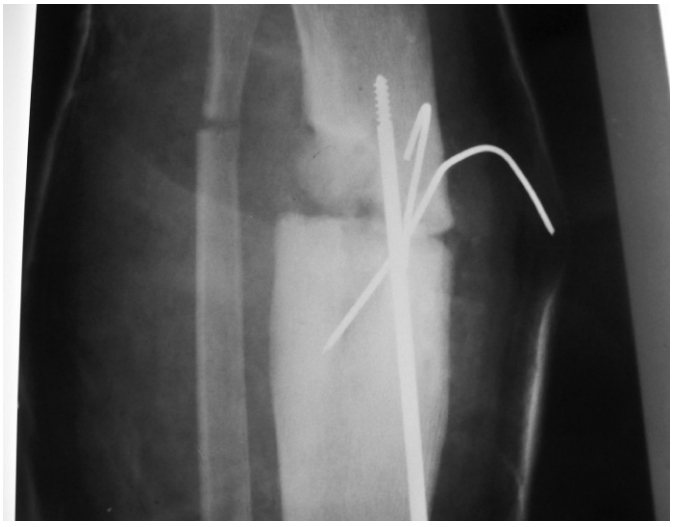


Figure 6: Post operative X-ray. Tibial osteotomy, fibular osteotomy and multiple smooth and threaded pin fixation. Plaster of paris augmentation to the fixation is shown.



Histopathology of skin specimen: The microscopy read: Sections show a fibro muscular tissue covered by an acanthotic skin whose epidermis exhibit supra-basal bullous formation. There is vascular proliferation to the dermis with peri-vascular lymphocytic infiltration. No dysplasia noted. This was concluded as showing features of pemphigus vulgaris.

DISCUSSION

Pemphigus vulgaris is indeed very rare worldwide. Forty six cases in children and 47 cases in juveniles have so far been reported in the English World literature (1). This patient we are reporting may be the 47th in the world literature. It is notable that in this child pemphigus vulgaris was not diagnosed before sustaining a pathological fracture. Pathological fracture due to pemphigus vulgaris has not been documented before in world literature, though bone complications have been noted before and are osteopenia, osteoporosis and osteonecrosis of the hip (1), mainly as complications of the high dose corticosteroid treatment.

It is now known that specific treatment for pemphigus vulgaris leads to control of the disease. Intravenous Immunoglobulin (IVIG), though expensive, is considered the cheapest treatment as it has least side effects .

This patient experienced a delay in diagnosis of at least seventeen months. The delay in diagnosis is not unusual as most studies cite a delay of between 1 month and 2 years from the onset of symptoms before the diagnosis of pemphigus vulgaris is made (1). Those citing shorter delays are 3–7 months (2) and 11.4 ± 18.5 months (9), before diagnosis of pemphigus vulgaris.

The reference to this as a case of abscess and later osteomyelitis is not unusual. This stresses the need to clearly distinguish such a case of pemphigus vulgaris from cellulitis, pyomyositis and osteomyelitis .

For our patient, corticosteroid treatment, introduced in the 1950's, is available for his treatment and should change the outlook. Other modalities should be considered based on the response to corticosteroids. Whichever modality is administered, lifelong treatment and monitoring is recommended for this patient.

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