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CASE REPORT

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# Unusual presentation of necrotizing fasciitis in an HIV exposed infant: A Case Report.

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**Abstract** Necrotizing fasciitis(NF) is a potentially life threatening soft tissue infection characterized by rapidly spreading inflammation with necrosis of fascia, subcutaneous tissues and overlying skin and is associated with signs of systemic toxicity.
We present a case report of an uncommon presentation of NF in an HIV exposed infant.
This report is highlighting the unique combination of absence of known pre existing cause, unusual site of presentation of NF, in this instance, it presented on the scalp, in an HIV exposed neonate. It also stressed the importance prompt diagnosis of all skin lesions in HIV exposed neonates, and the role of early diagnosis and aggressive multi disciplinary team management in salvaging NF which is a potentially fatal condition.

## Introduction

Necrotizing fasciitis(NF) is a potentially life threatening soft tissue infection characterized by rapidly spreading inflammation with necrosis of fascia, subcutaneous tissues and overlying skin and is associated with signs of systemic toxicity[1-3] NF is predominantly an adult disorder and is more commonly reported in adults with preexisting medical disorder such as diabetes mellitus and those with compromised immunity[2-5]. In the neonates it is a rare condition and often times attributable to secondary infection of omphalitis, balanitis, mammitis, postoperative complication of surgery and fetal monitoring.[1,4-7]

This report is highlighting the unique combination of absence of known pre existing cause, unusual site of presentation and HIV exposure in a neonate with NF, and also stresses the role of early diagnosis and aggressive multidisciplinary team management in salvaging this potentially fatal condition.

UC was a female infant admitted through the children's emergency room of Ebonyi State University Teaching Hospital Abakaliki (EBSUTH) with 2 weeks history of scalp ulcer. She was aged 3 weeks and weighed 3.4kg. She was delivered at term to a 27year old multiparous woman who had antenatal care in a rural maternity home but was neither counselled nor tested for HIV. Delivery was at a maternity home though uneventful, mother had prolonged rapture of membranes of 4 days associated with high grade fever. Immediate postnatal condition of baby was uneventful and she was exclusively breastfed.

At 4$^{th}$ day of life, vesicular lesions appeared posterior to the left ear of the baby which rapidly progressed in the next few days to involve most parts of the posterior scalp. By the 8$^{th}$ day, the scalp lesions ruptured and became ulcerated discharging serosanguinous fluid. This was associated with high grade fever, poor feeding and lethargy. There was no history of trauma or surgical procedure preceding the appearance of the scalp lesions. Initially ampicillin cream was applied to the lesion and oral ampiclox suspension was given. The symptoms however worsened and the mother presented the child to a local hospital in her community where she was

managed as a case of cellulitis. By the 15th day of onset of the lesion, the baby's condition deteriorated and she was referred to EBSUTH for expert management.

On admission she was acutely ill looking but conscious, febrile, with a maximum axillary temperature of 38.9°C. She appeared mildly pale but not dehydrated. She had a heart rate of140 beats/min and respiratory rate of 80 breaths/min. There was an extensive ulcer over the posterior half of the scalp and neck (fig 1, 2) which extended over the parietal and occipital areas of the scalp and posterior aspects of the neck.

Figure 1

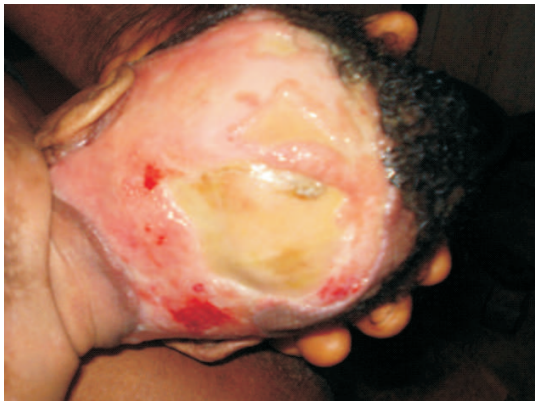

Figure 2

There was destruction of skin, subcutaneous fascia and muscle tissues leading to complete loss of posterior scalp exposing the occipital bone with purulent exudation (fig1, 2). The total body surface area involved was estimated at 9.5%. The full blood count revealed a packed cell volume of 30% (37-49%), a white cell count of $24.1x10^9/l$ ($4-11x10^9/l$). A peripheral blood film revealed a shift to the left with toxic granulations of neutrophils. A diagnosis of NF with overwhelming neonatal sepsis was made and the baby was commenced empirically on ceftriaxone and gentamycin.

Blood Culture yielded *Staphylococcus aureus* that was sensitive to ciprofloxacin, ceftriaxone and gentamycin but resistant to septrin, ampiclox, Cefotaxime and augumentin. Swab culture from the scalp lesion yielded (a) *B-Haemolytic Streptococcus* that was sensitive to ciprofloxacin, septrin, and augumentin but resistant to Ampiclox, erythromycin, ceftriaxone, and gentamicin. (b)*Klebsiella spp* that was sensitive to ciprofloxacin,ceftriaxone,oflaxacin and cefatoxime but resistant to augumentin,gentamycin and septrin.
Human immunodeficiency virus (HIV) test was positive for the mother; however the baby's HIV status could not be confirmed due to lack of facility for PCR in our center.

Within 24 hours of presentation, the surgical team was invited and subsequently the baby was taken to the theatre for wound debridement. All the non viable tissues were debrided until wound edges bled freely. The wound was later covered with sufra-tule and dressed on a daily basis

The antibiotics were later changed accordingly to ciprofloxacin, and baby responded favourably after a 3 weeks course on antibiotics. By the 2nd week following admission granulation tissue was noticed, however this did not completely cover the exposed occipital bone. Plans were made for wound resurfacing by the plastic surgeons, but this was however not done because the family could not bear the financial burden of plastic surgery. The child was discharged home after 31 days of hospital stay and was commenced on cotrimoxazole for pneumocystic carini pneumonia (PCP) prophylaxis. She was subsequently lost to follow up and plastic surgery could not be done.

## Discussion

Neonatal fasciitis (NF) is an uncommon but often fatal bacterial infection of the skin, subcutaneous tissue and fascia.[1,4-7] However Legbo[8,9] in his experience with 32 cases of childhood NF, reported that NF may not be uncommon among neonates in North western Nigeria and is associated with significant mortality and morbidity. Most studies report that NF is usually initiated following omphalitis, mammitis, balanitis fetalscalp monitoring, necrotising enterocolitis, Immunodeficiency and bullous impetigo[4,5,10]. It rarely starts de novo.[4,5] This index case contrasts these reports as the child was in apparent good health at birth with no obvious predisposing factor following the appearance of the scalp lesion While it is possible that this case might be due to *primary NF*[5] (which implies absence of any known cause) which is rare.[5]

It is also possible that seemingly insignificant trauma

Breaching the delicate skin and leading to virulent bacterial invasion.

It could be assumed perhaps because of earlier exposure of this infant to the mother who is HIV positive may have resulted in her being infected with the virus, thereby leading to immunodeficiency. HIV is the leading cause of childhood immunodeficiency in Nigeria[11]. Although the role of immunodeficiency as a contributing factor in NF has been previously documented, this has been in the context of chicken pox , measles and acute lymphoblastic leukaemia .[5,12-14] This is to our knowledge the first report linking a case of HIV exposure in a neonate with NF .

The site of presentation of NF in this patient is unusual. While earlier reports noted the commonest sites of presentation as the abdominal wall followed by the thorax and back [4,5,7] reports on scalp presentation are few and commonly follows fetal scalp monitoring,[5,7] which this child never had.

The diagnosis in this case was clinical. There was extensive necrosis of skin subcutaneaous, facial and muscle tissue extending from the parietal region to the occiput and the back of the neck. NF typically spreads along fascial planes causing widespread thrombosis of vessels[1-5,7] in face of the seemingly weak defence mechanism of this child. It is not surprising that there was extensive involvement of the scalp and apparent destruction of facsia and muscle, exposing the occipital bone. This is typically the nature of NF and has been described as a flesh eating bacteria syndrome[3,5,15] . This is because the virulent causative bacteria release toxins capable of activating T cell non specifically. As a consequence this causes overproduction of cytokines and severe systemic illness[1,3,5,15,16], which manifested in this child with fever, tachycardia, tachpnea, anemia, leukoctocysis and toxic granulated neutrophils. Several diagnostic procedures had been advocated for use in early diagnosis of NF including ultrasound, CT scan, histology and MRI. [17-19] MRI had been noted as the best tool in early diagnosis of NF; it was not used here because of its unavailability. [18,19] However, the manifestation of NF in this case was typical thus making clinical diagnosis unequivocal.

Blood culture yielded *staphylococcus aureus* while wound culture yielded *B-Haemolytic streptococcus* and *klebsiella spp*. This is in keeping with literature reports[2-4,7-10], as the usual causative organisms, although cultures sometimes are polymicrobial[2-4,7-10]

Early diagnosis and prompt surgical debridement with appropriate antibiotics are important in improving the chances of survival in patients with NF.[5,6,8,10,17] It has been reported that patients with NF have mortality rate of 73 % if left untreated[1,5] and without surgery and medical assistance such as antibiotics, the infection will rapidly progress and will eventually lead to death. In this case however, the child presented late to the hospital.

This is probably due to previously reported poor health seeking behavior of people living in remote villages in Nigeria, which is a consequence of ignorance and poverty.[20] Despite this, she still survived, and could be attributed to the aggressive and multidisciplinary management given her even in a resource poor setting such as ours.

Skin resurfacing was not done and the child was lost to follow up. This is in spite of the fact that the HIV status of the mother was made known to her and she was counselled on its consequence on the child and the availability of appropriate management of the condition. Due to poverty and ignorance discharge against medical advice and default from follow up is a major problem in this health facility and has been previously reported.[20]

This communication is highlighting the association between Neonatal NF and HIV infection, while advocating an aggressive management of all skin lesions in HIV exposed neonates in order to avoid this potentially fatal condition. We advocate for improved maternal services to reach the unreached who are mostly in rural areas .There is need for proper HIV counseling in these remote areas and also improving the prevention of mother- to- child transmission (PMTCT) in our fight in curbing the menace of HIV/AIDS.

Neonatal NF is very rare and there is a need for high index of suspicion in making prompt diagnosis, also special attention should be paid to these infants who are exposed to HIV that are apparently increasing in the Nigerian population . The authors also stressed that aggressive antibiotics and surgical debridement could yield favourable results, while highlighting all the constraints to optimal care of this child.

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