Clinical Case

Iatrogenic Necrotizing Fasciitis of the Right Leg in a 5-Year Old Girl From Yaoundé, Cameroon: Case Report and Lessons for the Future

Fasciite nécrosante de la jambe gauche chez une enfant de cinq ans.

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ABSTRACT

Necrotizing fasciitis is a severe soft tissue infection characterized by rapidly progressing necrosis of subcutaneous tissues. This rare condition carries a high mortality rate and requires prompt diagnosis and urgent treatment with radical aggressive surgical debridement and targeted antibiotics. We report the case of a 5-year old girl referred to our service of paediatric surgery with necrotizing fasciitis of the right leg following a peripheral vein infusion of quinine at a peripheral health Centre. The case is a reminder that severe life and limb threatening infection such as necrotizing fasciitis can result from simple procedures such as peripheral venous access. This underscores the importance of strict adherence to aseptic measures in all, especially invasive medical procedures.

RÉSUMÉ

La fasciite nécrosante est une infection des tissus mous sévère caractérisée par la progression rapide de nécrose, impliquant les tissues hypodermites. Cette affection rare porte un taux de mortalité élevé et nécessite un diagnostic rapide et un traitement urgent avec débridement chirurgical agressif radical et des antibiotiques. Nous avons décrit un cas d'une fille de 5 ans qui a été transférée à notre service de chirurgie pédiatre pour fasciite nécrosante de la jambe droite suite à une perfusion intraveineuse de quinine dans une veine périphérique sur la jambe dans un centre de santé. Le cas est un rappel que des infections sévères telles que la la fasciite nécrosante peuvent résulter de procédures simples telles que l'accès veineux périphérique. Il met en évidence la nécessité d'asepsie dans toutes les procédures médicales.

Key words. Necrotizing fasciitis, aggressive surgery, debridement, iatrogenic

Mots-clés. Fasciite nécrosante, chirurgie agressif, débridement, iatrogène

INTRODUCTION

Necrotizing Fasciitis (NF) is a rare but potentially fatal infection involving the subcutaneous tissues and fascia (1). This rare life threatening condition has been reported since the 18th century with various names depending on it location in the body (2). At onset, NF can be difficult to distinguish from other infections of the skin such as cellulitis (1). The aetiology is usually polymicrobial (aerobic and anaerobic), though it can equally be due to a single microbe (3,4). NF can be divided into two types; type I which is polymicrobial and type II which is caused by a single microbe, commonly group A β haemolytic streptococcus (5). The portal of bacterial entry may be trivial, and patients usually present with pain disproportionate to the visible skin changes (6,7). Clinical features are nonspecific and may include mild cellulitis, edema, and occasionally crepitations (6). Establishing the diagnosis of NF can be challenging in treating these patients, and knowledge of it clinical presentation as well as available tools is key for early and accurate diagnosis (2). Studies have shown that only 15-34% of NF have an accurate diagnosis on admission (8,9) mortality ranges from 9-64%. Individuals who are young and non-diabetic with extremity infections are reported to have relatively better outcomes (4). Early diagnosis and aggressive surgical treatment can reduce the morbidity and mortality associated with this condition (10).

Although iatrogenic injuries are relatively common (11), there have been a few reported cases of necrotizing fasciitis following intravenous injections (12). In this article, we described a case of NF secondary to iatrogenic intravenous injection in a resource limited setting.

CASE REPORT

A 5-year old girl brought by her parents to our paediatric surgery service with large wounds on the dorsum of the foot and postero-lateral aspect of the right leg. In the preceding two weeks, she had a fever and diagnosed with severe malaria at a private health facility. She was treated with intravenous infusion of quinine set up on a peripheral vein on the right leg after repeated failed attempts. Three days after commencing infusions, they observed swelling with erythema and development of vesicles at the distal third of the leg. This prompted referral to a district hospital where the vesicles were ruptured and alcohol dressing done. With persistent fever and purulent discharge from the lesions, debridement was done and child placed on parenteral antibiotics. Despite these efforts, there was no remission but rather worsening of symptoms and wounds. These prompted eventual referral to our center of paediatric surgery. On examination, she was pale and had a temperature of 39.6^{o}C, heart rate = 120beats/min, and respiratory rate = 30 breaths /minute. There were three large wounds (necrotic and discharging seropurulent fluid) on the posterolateral surface of the leg and dorsum of the foot (figure 1a &b). We did the following investigations: Table I shows the results of investigations at presentation and through hospitalization.

Table I: Biological investigations done at presentation and through hospitalization

Investigations		**Post-debridement**		
	Day 0	day 7	day 14	day 28
Haemoglobin / g/dl	6.7	8.7	8.4	9.2
WCC/ x 10^3 /mm^3	38.000	17.700	9.600	8.800
CRP) / mg/L	96	44	12	<6
ESR / mm/hour	112	88	32	18
HIV serology	Negative	ND	ND	ND
HB electrophoresis	AA	ND	ND	ND
Glycaemia / g/dl	88	ND	ND	ND
Serum creatinine/ g/dl	5.6	ND	ND	ND
Sodium / µmol/L	122	ND	ND	ND
Potassium / µmol/L	4.8	ND	ND	ND
Chloride / µmol/L	99	ND	ND	ND

White cell count WCC. ND = Not done
ESR: Erythrocyte sedimentation rate. CRP: C reactive protein
WCC: White cell count

X-ray of the leg didn't show any bony abnormality. We then concluded on a presumptive diagnosis of necrotizing fasciitis. After informed consent, aggressive surgical debridement and wound toileting was done under general anaesthesia (see fig 2a immediately after debridement), leg immobilized with foot at 90^{o} using a posterior leg-foot splint, and she was started on the following empirical parenteral treatment while awaiting culture results: ceftriaxone 75mg/kg /day, gentamycin 5mg/kg/day and metronidazole 30mg/kg/day. Immobilization of the limb, blood transfusion, analgesics and fluids. Early period following debridement was marked by persistence of fever. The results of blood culture available on day 8 of hospitalization cultured Streptococcus pyogenes sensitive to cefuroxime, imipenam and ciprofloxacine and resistant to ceftriaxone. Following blood culture results, the antibiotic were changed to intravenous cefuroxime. On day 10 of hospitalization, a second surgical debridement was done. The period following the second debridement was marked by decreasing pain and temperature. Figure 1d shows wound progress on day 40 of hospitalization. She was discharged on day 44 of hospitalization and lost to follow up.

DISCUSSION

Originally described by Hippocrates in the 5th century as a complication of erysipelas, necrotizing fasciitis later became known as a malignant ulcer. The current name was adopted in 1952 (5). The diagnosis of NF was made based on necrosis of tissues and a positive blood culture. Histopathology was not done because of financial constraints. Necrotizing fasciitis is a potentially life and limb threatening infection with mortality rates for those receiving inpatient care to be as high as 33% (13). The disease usually progress very rapidly causing large areas of tissue damage(14). As noted in our introduction, NF can be mono- or polymicrobial in nature. . There are a large number of reports concerning NF and its aetiology, and an equally large number of reports surrounding the epidemiology of hospital acquired / iatrogenic infections.

Despite all of these reports, there are remarkably few accounts on NF of iatrogenic origin. With respect to this case, the organism cultured from blood is normally found on the skin.

The management of necrotizing fasciitis is aggressive surgical debridement followed by serial wet wound dressings and parenteral antibiotics. In our case debridement was done twice. The patient was initially treated with parenteral empirical ceftriaxone which was changed to Cefuroxime on day 08 following results of blood culture and antibiotic sensitivity reported earlier. She received parenteral antibiotics for three weeks and oral antibiotics for three weeks. Monitoring was done clinically and using biological markers such as CRP and ESR.

In retrospect, comparing our case to what is described in literature it could be said that the patient had an aetiological factor with a portal of entry. However after extensive clinical and biological investigation, we didn't find any comorbidity in our patient. Clinical presentation was however suspicious of a poorly treated cellulitis of iatrogenic origin which progressed rapidly to NF.

Clinical and biological improvement following two successive aggressive surgical debridement with the use of antibiotics further confirms to the fact that prompt and early aggressive surgical debridement is the cornerstone of successful therapy of necrotizing fasciitis.

CONCLUSION

A typical NF following an iatrogenic peripheral vein access is rare. The case calls for an increased awareness towards the possibility of severe life threatening infections following peripheral intravenous vein access and hence the importance of always maintaining asepsis. It stress the need for strict asepsis in all medical procedures at the patient bed side including peripheral venous access. Aggressive surgical debridement is the main modalities of management.

COMPETING INTEREST

The authors declare there is no competing interest

ETHICS AND CONSENT

Written informed consent was obtained from patient's guardian for the publication of this case and accompanying images. Patient's confidentiality was also maintained throughout.

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