CASE REPORT

Periorbital Necrotizing Fasciitis

Kaleem Ullah[1], Tahira Zamir[2]

ABSTRACT:

Necrotizing Fasciitis is a rare, rapidly progressing and severe infection of subcutaneous tissue and underlying fascia. Thrombosis of perforating vessels of the skin and subcutaneous tissue is the characteristic pathological feature. The disease can be monomicrobial or polymicrobial in origin. However, Poly microbial source of infection is more common. Typical sites of infection include extremities, abdomen and perineum. High index of suspicion is essential to prompt early diagnosis and ensure a favorable outcome. Management necessitates immediate surgical and antimicrobial treatment. This case report describes the rare presentation of periorbital necrotizing fasciitis. However, it highlights the key features of the disease for example rapid progression and extension, severe pain, systemic toxicity and subcutaneous tissue necrosis. HIV infection was the risk factor whereas Streptococcus pyogenes and Staphylococcus aureus were the causative organisms. Prompt diagnosis, early surgical intervention and administration of intravenous broad spectrum antibiotics resulted in encouragable recovery.

Keywords: Necrotizing Fasciitis, Periorbital, Streptococcus pyogenes , Staphylococcus aureus.

INTRODUCTION:

Necrotizing Fasciitis (NF) is a rare, rapidly progressing and severe infection of subcutaneous soft tissue and underlying fascia. Vasculitis and microthrombi formation with eventual intravascular coagulation and spreading necrosis are characteristic pathological features of the infection and present clinically with quickly spreading erythema, severe pain, systemic toxicity and blistering of the skin. Muscle involvement may occur and typically precedes necrosis of superficial fascia, subcutaneous fat and neurovascular structures.[1] The rapid and destructive clinical course of NF is assumed to be caused by polymicrobial symbiosis and synergy. Monomicrobial infection is usually associated with immune-compromised patients (cancer, diabetes mellitus, vascular insufficiencies, organ transplantation, or alcohol abusers)[2]. Many aerobic and anaerobic pathogens may be involved, including Bacteroides, Clostridium, Peptostreptococcus, Enterobacteriaciae, Proteus, Pseudomonas, and Klebsiella, but group A hemolytic streptococcus and Staphylococcus aureus, alone or in synergism, are the initiating infecting bacteria[3].

Facial Necrotizing Fasciitis, particularly involving periorbital and orbital structures, is considered rare. Ocular involvement characterized by eye pain, periorbital swelling and reduced vision is a recognized complication of facial and periorbital necrotizing fasciitis. Clinical vigilance and immediate surgical and antibiotic management is essential to limit recognized sequel of blindness, meningitis and death[4].

✉ **Dr. Kaleem Ullah**
FCPS Resident
Al Ibrahim Eye Hospital Malir, Karachi
Email: kaleemshaikh1111@gmail.com
Dr. Tahira Zamir
Assistant Professor
Pharmacology Department
Bahria University Medical & Dental College, Karachi.
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CASE REPORT:

A 55-years-old married man resident of Dadu presented to the emergency department of AL- Ibrahim Eye Hospital, Malir, Karachi with the complain of swelling and pain in periorbital area for five days. Patient was unable to open his both eyes. According to the patient, he was alright 5 days back, when suddenly he noticed swelling in his periorbital area of both eyes. Later on, swelling was accompanied by pain. The swelling and pain were rapid in progress. Pain was extremely severe and excruciating in character. Patient was a diagnosed case of HIV for the last 6 months. There was no remarkable past surgical history. Patient was non diabetic and normotensive.

On general physical examination, patient looked ill but was well oriented with time, place and person. His temperature was 39.6°C. Pulse, respiratory rate and blood pressure were all normal. Rest of the general physical examination was unremarkable.

Local examination of involved area revealed edema, erythema, and necrosis involving eye lids, periorbital area, nasal bridge and forehead. His visual acuity was 6/6 in both eyes. On slit lamp examination, eye lashes were matted with marked edema of lids. There was copious pussy discharge from affected areas. Necrosis was more marked on lower eye lid. Rest of eye examination was not possible to perform. His blood was sent for investigation. Urgent blood report showed marked neutrophilia (WBCs 4×109/L) and raised C-reactive protein however ESR was normal. Provisional diagnosis of periorbital necrotizing fasciitis was made and patient was hospitalized with 2- hourly TPR (Temperature, Pulse and respiratory rate) charting. Intravenous antibiotics Vancomycin plus Ceftazidime 500 mg B.D and Metronidazole 400 mg TDS were started. On the same day, patient underwent immediate local excision and debridement of the involved tissue. Excised necrotic tissue and fluid aspirate were sent for immediate culture and microscopic examination. Pathological examination of the excised tissue showed necrotizing fascia with acute inflammatory infiltrate and culture from the surgical

wound were positive for streptococcus pyogenes and staphlococcus aureus. Blood culture was positive for staphlococcus aureus. Patient's condition was gradually improved and was discharged one week later with oral antibiotics. He was also counseled to have treatment for AIDS.

Figure 1a Necrosis of eye lids

Figure 1b Necrosis of periorbital area

Figure 2a After debridement

Figure 2b Patient at discharge

DISCUSSION:

Necrotizing Fasciitis (NF), the incidence of which has been reported to be 0.40 cases per 100,000 adults, is the most complicated and life threatening necrotizing soft tissue infection (NSTI). It has a progressive and rapidly advancing clinical course. Although occurring in all age groups, NF is slightly more common in older age groups (> 50 years of age) and there is a male to female ratio of 3:1 in most cases. The common sites of infection are the extremities (especially the lower extremities), abdomen and perineum[5]. The site of occurrence of necrotizing fasciitis in our reported case that is periorbital area is rare. However, the clinical presentation was typical. The patient presented with the characteristic symptoms that showed rapid progression and extension, intense pain, marked systemic toxicity and subcutaneous tissue necrosis. The age and gender of our reported case is in accordance to age and gender reported in literature.

Microbial invasion of skin and subcutaneous tissue occurs either through external trauma and surgical wounds or directly through bacterial invasion from a perforated organ. Microorganisms appearing in the skin and subcutaneous tissue spaces produce various toxins that cause prolonged vasoconstriction in the dermal capillary network. However, the thrombosis of perforating vessels of the skin and subcutaneous tissue is the characteristic pathological feature.[6]

The recent clinical classification distinguished four NF types: Type I (70-80%, polymicrobial/synergistic), type II (20% of cases; usually monomicrobial), type III (gram-negative monomicrobial, including marine-related organisms) and type IV (fungal)[7]. In a retrospective study that reviewed 198 patients, 182 patients had polymicrobial source of infection.[8] Similarly, Anderson in his study found that more than 71% of cases had a polymicrobial source of infection.[9] The microbiological report of our presented case showed infection with streptococcus

pyogenes and staphylococcus aureus (Group A hemolytic bacteria) which are the most common initiating bacteria causing necrotizing fasciitis as described earlier. Intravenous broad spectrum combination of antibiotics was used initially because of the more common polymicrobial source of infection[3].

The most common risk factor for the development of necrotizing fasciitis is diabetes mellitus, with an occurrence of 56% in all cases. Other risk factors include obesity, alcohol abuse, immunodeficiency, chronic renal failure, liver cirrhosis, hypertension, peripheral vascular disease, and age above 60 years[10]. The presence of HIV was found to be the risk factor in our patient. The immune-compromised state of patient along with polymicrobial origin of infection is in agreement to reports in literature.

Although NF is rare, its mortality rate is high, ranging from 6% to 76%, although it is found to be much lower in recent studies (approximately 26%). It must be managed aggressively and requires extensive surgical debridement in combination with high-dose IV antimicrobials. Delay in treatment of more than 6 to 12 hours or inadequate primary surgical debridement contribute to significant morbidity and mortality.[5] Numerous studies have found that that the most important variable for the mortality rate is the timing and extent of the first debridement. In the study done by Mock the relative risk of death was 7.5 times greater in cases with improper primary debridement.[11] and in the study of Wong it was 9 times greater when primary surgery was delayed more than 24 hours[12].

CONCLUSION:

In conclusion, prompt diagnosis, early surgical intervention and administration of intravenous broad spectrum antibiotics are the keys to improve the survival in periorbital necrotizing fasciitis.

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