Original Research Paper

Volume : 5 | Issue : 10 | October 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Steroid Rage- A Case Series of Necrotising Fascitis With Chronic Corticosteroid Therapy

Medical Science

KEYWORDS :

Dr M S Anilkumar professor and unit chief,dept of general surgery , Jss medical college and hospital,Mysore,India

Dr Poornima S Bhat postgraduate,dept of general surgery, Jss medical college and hospital,Mysore,India

Introduction
Necrotizing fasciitis is a rare and life-threatening rapidly progressive soft tissue infection. Fulminate case could involve muscle and bone. Necrotizing fasciitis after long term corticosteroid therapy have been reported. We present a case series of fulminate necrotizing fasciitis occurring in patients who use corticosteroids for asthma and connective tissue disorder.

Case presentation
3 cases of necrotizing fasciitis presented to Jss hospital with history of chronic corticosteroid use for co morbidities like asthma and connective tissue disorder. All the three cases reported here have had history of steroid use and two of the three cases had chronic bronchial asthma and one patient had systemic lupus erythematosis.

Conclusion
Long term steroid use in these patients appear to be a very important risk factor for developing necrotizing fasciitis due to immunosuppression and also the time taken for the disease to resolve was longer than the normal population

CASE ONE
A 68 year old male patient , chronic asthamatic on 10years of steroids presented to the Emergency Department of our hospital with erythema, induration, pain, and swelling of the right lower limbs, which extended from the digits up to the mid leg. The skin appeared erythematous and warm, with skin blebs on distal leg. He was septic with hypotension (blood pressure 80/40 mmHg), chills, fever (temperature 39°), and tachypneic. Respiratory rate was 21 breaths/minute, and the oxygen saturation was 98% on room-air. Capillary refill occurred in 4 sec. The patient was able to move his toes within a limited range. Sensation of light touch was intact in the distribution of tibial, sciatic nerves.

Laboratory-test results showed hyponatremia (128 mEq/L), leukocytosis (WBC $20*10^3/\mu L$), anemia (hemoglobin 10 g/L), creatinine 1.5 mg/dL, glucose 93 mg/dL. Plain radiographic findings were similar to those of cellulitis, with increased soft-tissue thickness and opacity. Duplex ultrasonography excluded deep vein Thrombosis. Two peripheral intravenous lines and a urethral catheter were inserted. The patient was resuscitated. Specimens of blood, urine, and bullae-fluid were sent for culture. During the 1.5 hours in the Emergency Department 2 liters of normal-saline were infused intravenously, as was dexamethasone 4 mg iv. Piperacillin/tazobactam 4.5 mg, and clindamycin 600 mg were initiated. Tramadol was administered as needed for pain.

Patient underwent emergency debridement of right lower limb. Cultures of blood and bullae-fluid obtained before the initiation of antibiotics were sterile. As the patient improved, steroids were tapered off and wound healed slowly. With regular dressings, the patient was discharged after 2 weeks with advice for skin grafting at later date.

CASE TWO
A 58 year old man with history of chronic asthma and on long term oral and inhalational steroid use presented to the emergency department with history of sudden onset erythema, swelling and pain over the right lower limb since one day. Patient is a known diabetic on insulin therapy. At the time of presentation to the emergency department patient was febrile and his pulse was 120 and blood pressure was 90/60mmHg.Patient was resuscitated in the EMD and his bloods were sent for laboratory investigations.

Laboratory investigations revealed a total leukocyte count of (WBC $30*10^3/\mu L$). His renal functions were altered.

Patient was put on low dose steroid, iv antibiotic and proton pump inhibitors and also underwent debridement and fasciotomy and eventually patient was discharged from the hospital on day 18 after complete recovery.

Case 3
A 35 year-old woman visited the OPD with complaints of fever, painful swelling and induration with multiple erythematous skin lesions on left lower limb. She had a history of rheumatoid arthritis of left fingers and has taken high dose of steroid for 2 years, which could have lead to her weak immune status. We diagnosed necrotizing fasciitis based on the symptoms, and the patient was managed with emergent fasciotomy, surgical debridement, regular dressings and antibiotic therapy.

IV Linezolid was administered for ten days.
Microscopic observation of the skin showed severe inflammatory infiltrates with extensive necrosis and neutrophilic microabscess, suggesting necrotizing fasciitis is. We administered a reduced dose of steroid, with appropriate maintenance. She was fit for discharge after 3 weeks.

Discussion
Necrotizing fasciitis (NF) is an aggressive, life-threatening emergency in diabetes [1]. Diabetes is reported as a co morbid condition in 60–70% of NF cases [2]. Common organisms incriminated are Staphylococcus aureus, group A streptococci, Escherichia Coli, Klebsiella Pneumoniae and a variety of anaerobic organisms [3]. Pre-disposing factors include trauma, surgery, insect bite, and scratch. Patients with diabetes affected are significantly older with high glucose (>110 mg/dL), and potassium levels (>4.0 mEq/L), which are associated with increased mortality [2]. Patients on long term steroid use and also in patients with history of steroid abuse the virility of the organisms appear to be higher and also the time taken for the wound to heal is also longer. Diabetes is a clinical predictor for limb amputation in patients with NF [4,5].

Risk factors of mortality in NF patients also include female gender, age >60years, chronic heart disease, cirrhosis, hypoalbuminemia <3g/dL, systolic blood pressure <90 mmHg,

pulse rate > 130, serum creatinine ≥1.6 mg/dL, and skin necrosis [4]. Factors in favor of a good prognosis in our patient were early diagnosis, immediate surgical intervention, male gender, pulse rate < 130, glucose < 110 mg/dL, serum potassium 3.7 mEq/L, and negative blood cultures on ad-mission. Methicillin-resistant Staphylococcus aureus (MRSA) sensitive to clindamycin, vancomycin, linezolid, and daptomycin was isolated from debrided sample.

Transmission of bacterial pathogens during blood-contaminated injuries, despite the relatively transient nature of most bacterial infections in the bloodstream, has been previously reported [6]. Even though the injury was minor, the infection progressed rapidly and required aggressive therapy. Timely and appropriate antibiotic administration has been shown to reduce the mortality rate significantly in NF [7]. Recent studies have revealed emerging monomicrobial pathogens of NF, indicating that the causative agents are consistently changing [8]. Linezolid was initiated because of the possibility of community-acquired MRSA [9]. Clindamycin significantly improves survival in group A streptococcus infections [10].

The present case series support the importance of effective antibiotic treatment and surgical debridement lead to favorable prognosis of NF in an immunocompromised patient with insulin-treated steroid diabetes. In our case series, the early diagnosis of NF aided in prompt surgical debridement. Finally, among the factors previously described in favor of a good prognosis in a diabetic patient with NF, tight glycemic control during hospitalization should also be included.

In conclusion, achievement of euglycemia, maintenance of tissue perfusion, blood pressure, oxygenation, and antimicrobial therapy were the temporizing measures used to our diabetic patient, until surgical exploration was performed. Everyday rigorous surgical cleaning was also of major importance to the good prognosis of our patient.

Conflict of interest

The authors declare they have no conflicts of interest. The authors whose names are listed above certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

FIGURE OF CASE 1

FIGURE OF CASE 2

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