Necrotizing Fasciitis: An Unusual Presentation

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Abstract Necrotizing fasciitis (NF) is rare but life threatening multimicrobial soft tissue infection characterized by progressive, usually rapid, necrotizing process of the subcutaneous tissues and fascial planes, with resulting skin gangrene and systemic toxicity. The groin, abdomen and extremities are the most frequent sites involved by this disease and it is rarely seen in the head and neck region. NF of the head and neck region has a potentially high morbidity and mortality. Delay in diagnosis leads to poor outcome. Hence early recognition and aggressive management is imperative for successful outcome. Here we present a case of acute onset of cervical necrotizing fasciitis in a young male.

Keyword Necrotizing fasciitis · Soft tissue infections · Diabetes mellitus

Case Report

A 33-year old male presented to the emergency room complaining of painful neck swelling with difficulty in breathing. Patient was apparently alright the previous night and noticed the swelling during the early morning hours. The cervical swelling increased over the next few hours and was brought to the hospital by noon. Patient did not have any associated history of throat pain, trauma, or tooth ache. He was a normotensive and not a diabetic, had family history of diabetes. Examination showed a diffuse swelling of submental and submandibular region with edema of the floor of the mouth with trismus. The skin over the swelling

was erythematous, tender and the swelling was fluctuant. Provisionally a diagnosis of Ludwig's angina with submandibular abscess was made. Patient had difficulty in breathing on lying down. A X-ray neck lateral view done elsewhere showed evidence of airway obstruction (Fig. 1). Patient was shifted for CT scan and developed stridor on table. Hence he was immediately rushed to the theatre and an emergency tracheostomy was done. A low tracheostomy was done as none of the landmarks in the neck could be identified (Fig. 2).

It was decided to explore the neck on table. A transverse incision was made over the submental region. The whole subcutaneous fat and partly the muscles were found to be necrosed (Fig. 3) and it was foul smelling. A brownish fluid oozed out of the muscle planes and there was no evidence of pus in the submental or submandibular space. Deep cervical fascia was found to be necrosed and the debrided tissues were sent for histopathological examination. Similarly the parapharyngeal spaces were explored on either sides through a separate vertical incision along the sternocleidomastoid to look for any abscess formation. Necrosed subcutaneous fat from these areas were debrided and a swab was sent for culture sensitivity from these necrosed areas. A dental examination was also done in the same sitting to look for any dental foci. However the oral cavity and oropharynx were normal except for edematous floor of the mouth. The explored areas were left open and antibiotic dressings applied. Blood report showed leukocytosis. His random sugar levels were 350 mg/dl. Glycosylated haemoglobin was 9.5. Patient was started on three antibiotics—clindamycin, meropenem and metronidazole. He was started on insulin infusion at the same time and sugar levels were persistently above 300 mg over the next 3 days. Streptococci was grown in culture and was sensitive to clindamycin. Clinically signs of improvement

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Fig. 1 Narrowing of the airway

Fig. 2 Diffuse swelling around the submandibular and submental region

Fig. 3 Necrosed muscle tissue

could be seen as the swelling gradually reduced, trismus subsided and the edema of the floor of the mouth subsided. Daily dressings were done and the following week he was again taken up debridement under general anaesthesia and the two vertical incisions along the sternocleidomastoid muscles were closed. And the following week after the final debridement the submental incision was closed. A

week later CT scan with contrast was done and it did not show any focus of infection. Patient was weaned of tracheostomy tube and the stoma was closed and the patient discharged from hospital.

Discussion

The first description of the disease was by Joseph Jones in 1871 when he referenced more than 2,600 cases during the civil war. Various names have been ascribed to this lesion including hospital gangrene, gangrenous or necrotizing erysipelas, hemolytic or acute streptococcal gangrene, suppurative fasciitis, Meleney's gangrene and Fournier's gangrene. The term necrotizing fasciitis was first coined by Wilson in 1952 [1–4].

The disease in the head and neck can be divided into two groups because it behaves differently in each area. The first group is the scalp and the eyelids, where the disease is most commonly caused by trauma followed by infection. The other group includes the face and the neck and is a rare entity. Dental infections are the most common etiology, followed by trauma, peritonsillar abscesses and osteoradionecrosis. This group has a rapidly progressive course with 65% of cases in one series developing extension into the chest wall and mediastinum, and a mortality rate of 27%.

Necrotizing fasciitis may affect patients of all age groups [5] without sex or race predilection [4]. The clinical picture is dependent on the stage of the disease and its primary origin. The onset of symptoms is usually 2–4 days after the insult. The skin is red-hot, smooth, tense and tender without sharp demarcation between the involved and normal skin [6, 7]. Soft tissue crepitance is common from gas formation. As the disease progresses, the skin becomes dusky and small blisters appear. The skin necrosis is secondary to thrombosis of the nutrient vessels passing through fascia [1, 6, 7]. The patient is acutely ill, with low to medium grade fever associated with tachycardia out of proportion to the temperature elevation [3]. Until now, there has been no specific diagnostic method for NF. Several adjuvant studies have been useful as an aid in detecting the condition, e.g., radiographic study, CT scanning, isotope scanning and frozen section biopsy [8]. Gas in soft tissue as seen in our patient is highly suggestive but not pathognomonic [1–3]. The hall marks of NF are widespread fascial necrosis with extensive undermining and serosanguinous, often foul smelling exudates. Prompt and successful management of NF is universally agreed to be surgical intervention, intravenous widespectrum antibiotics and supportive therapy [9]. It is of the utmost importance to explore and drain all the affected areas as was done in our case. Wide extensive fasciotomies with exposure of all involved fascia and excision of necrotic

tissues should be carried out. Early surgical intervention would minimize loss of the covering skin and avoid cosmetic disfigurement [5]. We used wound dressings soaked in betadine and hydrogen peroxide solution for daily dressings. Broad spectrum antibiotics covering both aerobic and anaerobic organisms should be initiated and changed according to the sensitivity patterns.

We would also like to stress on the fact that antibiotic therapy alone is considered insufficient for the management of NF without surgical intervention. The nutritional support, whether enteral or parenteral, is also of great importance. Control of diabetics with insulin and a diabetic diet also needs to be emphasized as was in our case. Death from necrotizing fasciitis is usually due to overwhelming sepsis, respiratory failure, renal failure or multiorgan failure [4]. The mortality ranges between 8 and 73% [1, 2, 6].

This case is presented for its rarity and successful outcome. To the best of our knowledge a case of NF with onset of a few hours duration has not been documented. At times decisions have to be taken without the help of a radiological investigation as was in our case. Isolated diabetes as a cause for NF is also a rarity. Early diagnosis and aggressive surgical management was the key to successful outcome.

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