NECROTIZING FASCITIS IN A NOMAD WITH UNDIAGNOSED PULMONARY TUBERCULOSIS. A CASE REPORT.

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ABSTRACT
Cervical necrotizing fasciitis (CNF) is a severe acute poly bacteria infection of the fascia plane of the head and neck region. It is usually associated with rapid and extensive fascia necrosis, necrosis of the overlying skin and the vasculature and severe systemic toxicity. We present the case of a 60-year old female nomad with undiagnosed pulmonary tuberculosis with CNF arising from a possible insect bite. Intravenous antibiotics, anti Koch's and high protein, high calorie diet, in addition to aggressive and repeated surgical debridement were used to manage this patient with good result. The challenge of managing this patient is discussed in line with the existing literature.

Key words: *Necrotizing Fasciitis, Nomad, and Bovine Tuberculosis.*

INTRODUCTION

Joseph Jones first published a clear description of necrotizing fasciitis during the American civil war[1]. In the United States and in the UK there have been several articles in the unpeered review journals about the 'flesh-eating bacteria[2, 3,4].

A relatively uncommon, but aggressive soft tissue infection, it involves the superficial musculoaponeurotic system and the superficial fascial planes of the head and neck. It may complicate deep soft tissue infections such as dental infections, pharyngotonsillitis, trauma and insect bite. It is usually associated with extreme systemic toxicity and sepsis[5].

Immunodepression such as in malnutrition, burns, and diabetes mellitus[6,7, 8.] Malignancy, alcoholism, radiotherapy have all been known to be predisposing factors to the development of cranio cervical necrotizing fasciitis[6,7,8]. Group A beta Hemolytic Streptococcus, Staphylococcus spp., and Anaerobes are the causative agents[9]. These organisms acting alone or in synergism produce a severe necrotizing infection of the head, neck and scalp.

The incidence of this disease is said to be on the increase worldwide[2, 3]. We present an extensive and successfully treated CNF in a 60-year old female nomad with undiagnosed pulmonary Tuberculosis.

Case Report

A 60-year old female nomad was admitted to the Accident and Emergency unit of the hospital with a painful foul smelling anterior neck wound of 3 days duration. A week before presentation, patient woke up with a right jaw swelling which increased in size rapidly. She presented to her general practitioner 3 days later when an incision and drainage of the jaw swelling was done and she was placed on some oral antibiotics. There was a rapid extension of the swelling to involve the anterior neck region and the upper part of the anterior chest wall just above the right breast with a foul smelling discharge. She was not a diabetic, nor history of hypertension and there was no history suggestive of dental diseases. Although she was of asthenic build, but she had lost weight significantly over the past few months prior to the onset of the illness. She consumed unpasteurized milk and local cheese but no history of contact with anyone with chronic cough.

Physical examination revealed a conscious and alert patient. She was mildly pale and dehydrated, with a body temperature of 38.5ºC, the blood pressure was 150/90mmHg, the respiratory rate was 22 cycles/minute, while the pulse rate was 100 beats/minute. There was necrotic skin over a non crepitant fluctuant swelling extending from the ramus of the mandible on the right side to involve the whole of the anterior neck, the supra sternal notch and the upper chest wall to a level just above the right breast (fig. 1).

Fig 1:

There was a wound over the right jaw and the neck measuring about 5cm by 8cm discharging copious amount of foul smelling exudates. Examination of the ear, nose, and the pharynx revealed no abnormality. Dental examination revealed only dental calculi but no periodontal disease. Cervical x-ray revealed no abnormality. Chest radiographs however revealed features of pulmonary Tuberculosis, confirmed by a positive Acid Fast Bacilli in the patient's sputum. Retroviral screening was negative. A wound swab for microbiology, culture and sensitivity yielded a growth of Staph. aureus and Pseudomonas spp. However blood culture showed no growth. There was no facility for anaerobic culture in our institution as at present.

A diagnosis of CNF was made. She was commenced on intravenous Zinacef, Gentamicin and Metronidazole, Tetanus toxoid in addition to intravenous fluid therapy. Repeated wound debridement under sedation was carried out at the bedside because patient could not afford the cost of debridement in the theatre. Extensive necrosis of the skin, the cervical fascia and the platysma was found. There was copious foul smelling discharge. A thrice daily dressing with Hydrogen Peroxide and copious irrigation of the wound with normal saline was then commenced, followed by a twice daily and later, a once daily dressing regime, as the wounds got cleaner. Patient was also commenced on anti-Koch's regime of Rifampicin, Isoniazide, Pyrazinamide, Ethambutol and Pyridoxine. High protein, high calorie diet and physiotherapy were also commenced. Patient made a very remarkable progress after the addition of the anti-Koch's regime. Physiotherapy was added to her management in order to prevent contractures.

The wound was ready for skin grafting fourteen days after admission. However, this could not be carried out due to financial constraints and thus she remained on daily dressing. She did well and she was discharged to the follow up clinic after 60-days of hospital admission.

DISCUSSION

Necrotizing fasciitis is an uncommon rapidly spreading, life threatening poly bacteria infection. It is usually associated with significant morbidity and mortality due to toxemia, dehydration and severe biochemical disturbances[10].

This disease has been found in patients of all ages and has no sex or racial predilection[11]. Trauma, such as hypodermic needle injection, insect bites, abrasions, lacerations and some surgical trauma have been found to initiate this disease. Trauma is likely to be the case in our patient who probably had an insect bite, which initiated the disease, or it might be the surgical incision and drainage by her general practitioner. Infection may develop with no apparent cause sometimes[3, 10]. The commonest cause of craniocervical necrotizing fascitis is odontogenic in 30%, followed by trauma in 28% of cases[12, 13]. This patient, probably, had her infection initiated by trauma from either the insect bite or the surgical incision and drainage. This patient presented with pulmonary Tuberculosis in addition to CNF. The association with tuberculosis in this patient is not clear, however tuberculosis is known to be associated with malnutrition and immunodepression, which have been linked with necrotizing fascitis.

Although, we were not able to characterize the type of mycobacterium responsible for this patient's tuberculosis, Bovine tuberculosis was suspected. This is because this patient is a cattle farmer (Nomad) and there is a history of consumption of unpasteurized milk and local cheese, which could have been contaminated with Mycobacterium bovis.

Group A Beta Hemolytic Streptococcus (GABHS) was not isolated in this patient however; Staphylococcus and Pseudomonas were isolated from the wound. The fact that GABHS was not isolated in this case could be due to the fact the patient had been on antibiotics before presentation. Although poly bacteria have been identified to be associated with this disease, the Staphylococcus and Pseudomonas that were isolated in this case could be contaminants rather than the initiators of this condition in this patient. The significant improvement that followed the introduction of anti-Koch's suggest that the treatment of the underlying disease is as important as the aggressive treatment of the necrotizing fascitis.

The exact mechanism of the rapidly spreading gangrene in CNF has not been well established. However, the release of enzymes like hyaluronidase and proteolytic portions of the cell membranes has been shown to contribute to the necrosis[13]. The relatively poor vascularity of the fascia planes and the fact that the diffusion of antibacterial agents into the infectious foci is greatly hampered contributes to the spreading gangrene. This could be the reason why this patient still developed extensive spread despite early oral antibiotics prescribed by her general practitioner. This emphasizes the need for early and extensive debridement once the diagnosis is made[7]. Excessive cytokines, complement and clotting cascades and production of oxygen free radicals and nitric acid has been found to be responsible for shock and multiple organ failure in this condition[7]. T-lymphocytes, the T4 and tumor necrosis factors are known to play an important role in the pathogenesis of this disease. The super antigens such as SPE-A, SPE-B, and SPE-C secreted by some GABHS strains cause millions of clones of T cells to be activated. Intravenous Immunoglobulin G (IVIG) has been shown to reverse the hyper proliferation of T cells, neutralize the super antigens, and thereby down regulate the production of Tumor Necrosis Factor thereby protecting the patients against shock and multiple organ failure[7]. Our patient did not have IVIG as it is not readily available in our setting, however, aggressive antibiotics, fluid therapy, high protein, high calorie diet, repeated debridement in addition to the treatment of the underlying Koch's led to a desirable outcome. The use of sterile maggot in extensive wound debriment has been reported[14]. Our patient could have benefited from its use, however sterile maggot is not available in our environment. Skin grafting would have reduced this patient's hospital stay, but this could not be done due to financial constraints on the part of the patient; she had to wait for her wound to heal on daily dressing

only, which necessitated her staying in the hospital for 60 days. Early physiotherapy helped in preventing contractures and this was continued until she was discharged. She was seen at the follow up clinic (FIG.2) about 2 weeks after discharge and remains well on anti-TB therapy.

Fig 2:

Prompt diagnosis, adequate resuscitation, broad-spectrum antibiotics and thorough surgical debridement remain the cornerstone of a successful outcome. This is in addition to the management of the underlying predisposing factor.

To the best of our knowledge, this is the first reported case of CNF in association with possibly Bovine Tuberculosis in a female nomad.

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