

DADDY, GIVE ME MY HAND BACK

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INTRODUCTION

Necrotizing myofasciitis (NM) is a severe but extremely rare soft tissue infection with extensive destruction and necrosis that extends beyond the fascia and involves the muscle, skin, and surrounding tissues manifested in the form of necrotising fasciitis and necrotising myositis¹. It is a rapidly progressive, invasive, and life-threatening condition which represents a spectrum of clinical symptoms that are nonspecific until the appearance of a fulminant soft tissue destruction and septic shock². Early disease recognition with appropriate diagnosis and quick decision making are vital to minimize morbidity and mortality.

CASE REPORT

10 years old boy presented to Emergency Department (ED) with complaint of left forearm pain and swelling following fall from stairs 2 days prior to symptoms. He also developed fever and had history of massage prior to ED visit. The boy was brought to ED few days after incident as the father initially seek traditional treatment.

Examination revealed septic looking boy with swollen left forearm from above elbow until dorsum and volar aspect of hand with multiple blisters (Figure 1). He had loss of sensation over all nerves distribution. Compartment was tense over distal forearm with weak radial pulse. Radius/ulna radiograph showed midshaft radius and ulna fracture with gas shadow up to elbow joint meanwhile urgent ultrasonography of left upper limb revealed features of intramuscular collection with soft tissue gas (Figure 2).

Resuscitation with fluid bolus of 40cc/kg and intravenous antibiotic were done and he was sent to operation theatre for emergency fasciotomy and wound debridement which later on end up with left transhumeral amputation. Operative findings demonstrated necrotic muscle with pus in the compartment which fit the diagnosis of necrotizing myofasciitis. The culture and sensitivity of the tissue taken intraoperatively came out as *Enterobacter*. In ward, patient was treated with combination of antibiotics which were intravenous Clindamycin and Tazocin (Piperacillin-Tazobactam).

Necrotizing soft tissue infections (NSTI) are rapidly progressive skin and soft tissue infections that cause widespread tissue necrosis and are associated with systemic illness accompanied by sepsis, multisystem organ failure, and often death in which mortality from NSTI has remained reasonably high at 25% to 30% for the past 30 years. Mortality rates remain highest when NSTI is accompanied by shock and host factors such as advanced age, comorbidities, or immunocompromised state⁷

The pathogenesis of these soft tissue and muscular infection involves hematogenous dissemination in the setting of muscle injury as a result from penetrating trauma, vascular insufficiency, malignancy, or surgery in which the infecting organism is related to the mechanism of the infection. The most common causative organism in the majority of cases is *Staphylococcus aureus* accounting for 90% of infections³. Infection in the setting of penetrating wounds or vascular insufficiency is often polymicrobial⁴. Gram-negative bacilli infection in NM is very rare which is found mainly in the context of immunodeficiency⁴. Surprisingly, culture and sensitivity of the tissue taken intraoperatively from our patient came out as *Enterobacter* which made our case unique.

Studies reported muscle trauma as the mechanism of injury in 30 to 50% of cases⁴ and was proposed as a prerequisite to the development of this disease as it leads to hematoma formation that may be seeded during transient bacteraemia. It is true in our case as the portal of entry for the organism in this patient is trauma as patient had history of fall prior to ED visit resulting in neglected open fracture midshaft left radius and ulna⁵. His condition was exacerbated by seeking traditional treatment with massage and herbs prior to hospital visit which resulted in limb amputation as shown in a study that herbal treatments might triggered vasospasm and thrombosis and, in some cases, lead to limb autoamputation⁹.

The role of imaging in this case is essential as the presence of subcutaneous emphysema in the soft tissues on plain radiographs can aid in the diagnosis of NSTI⁷. Ultrasound, computed tomography (CT), or magnetic resonance imaging (MRI) scans are more sensitive at detecting soft tissue infection although MRI is the imaging of choice due to its high precision, the rapidity and portability of point-of-care ultrasound (POCUS) in the emergency setting is more feasible and it has good diagnostic accuracy for differentiating abscesses from cellulitis and led to a correct change in management in 10% of cases⁸. Although more data are needed to determine the ideal training and image acquisition protocols before POCUS can be established as a mainstream diagnostic modality for NSTI, the role of ultrasound in emergency setting should be highlighted in facilitating our management as it is proven beneficial in this case as patient was planned for emergency operation after the ultrasound done revealing intramuscular collection with soft tissue gas in addition to clinical condition of patient who was in sepsis.

The gold standard treatment in NM is immediate and complete surgical debridement, combined with antimicrobial therapy and close monitoring⁶. Initial empirical therapy should include a broad-spectrum coverage of polymicrobial infections because about half of these infections will be polymicrobial in nature⁷. This should include a MRSA-active agent, such as vancomycin and a broad-spectrum agent against gram-negative pathogens, such as piperacillin-tazobactam or carbapenems also metronidazole or clindamycin for anaerobic coverage. In ward, patient was treated with combination of antibiotics which were intravenous Clindamycin and Tazocin (Piperacillin-Tazobactam).

Although antibiotic therapy, resuscitation and critical care evaluation are important in the treatment of patients presenting with NM, the mainstay of therapy remains surgical treatment as it is associated with high rates of morbidity and 100% mortality without surgical intervention⁹



Figure 1: Swollen left forearm



Figure 2 : Ultrasound features of intramuscular collection with soft tissue gas within

CONCLUSION

A high index of suspicion for the diagnosis when encountering patient with extreme muscle pain and swelling is required for extremely rare conditions like NM, because early diagnosis and surgical intervention significantly reduce mortality which is vital in determining patient's outcome.

DISCUSSION

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