CLINICAL VIGNETTE

Necrotizing Fasciitis Without Penetrating Wound

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Case Presentation

A 38-year-old previously healthy male presented with right shoulder pain for two days. He was invited by his friend to go bowling two days prior. He enjoyed the game but "strained" his left shoulder throwing a heavy ball. He had mild right shoulder pain immediately after the event but was able to finish the game without much difficulty. The next day, he experienced excruciating pain in the right shoulder. His friend could not understand why he complained so much from a minor strain but offered him some Ibuprofen. His severe pain persisted despite multiple doses of Ibuprofen. The next day, he started feeling nauseated and weak and he needed a ride from his friend to come to the office because his shoulder pain prevented him from driving. He denied recreational drug, alcohol and tobacco use. Upon review of systems, he had mild sore throat prior to bowling, but no fever, chills or cough.

On initial evaluation, he appeared ill and in severe agony. His temperature was 99.9 F. His blood pressure was 90/50 mmHg which is slightly lower than his baseline of 110-120/ 70-80 range with pulse rate was 100 bpm. His breathing was deep, rapid and labored at 30 per minute. Oxygen saturation was 97%. He had marked right shoulder pain with both active and passive range of motion. On inspection of the right shoulder joint, he had normal skin color and texture and no skin wound, rash, blister or any signs of infection. There was a small area of smooth skin bulging under the right scapula with crepitus on palpation. The rest of his physical examination was unremarkable.

Arterial Blood Gas was not available in the clinic. Stat labs were notable for elevated white blood cell count to 23,000 with left shift and elevated creatinine level at 3.1 mg/dl. Stat non-contrast CT scan of the right showed dissecting gas along fascial planes. He was transported to the emergency room for intravenous antibiotic treatment and surgery was consulted for emergency debridement.

Discussion

Necrotizing fasciitis is an uncommon soft-tissue infection, usually caused by toxin-producing, virulent bacteria, which is characterized by widespread fascial necrosis with relative sparing of skin and underlying muscle. It is accompanied by local pain, fever, and systemic toxicity and is often fatal unless promptly recognized and aggressively treated. The disease occurs more frequently in diabetics, alcoholics, immunosuppressed patients, i.v. drug users, and patients with peripheral vascular disease, although it also occurs in young, previously healthy individuals. Although it can occur in any region of the body, the abdominal wall, perineum, and extremities are the most common sites of infection. Introduction of the pathogen into the subcutaneous space occurs via disruption of the overlying skin or by hematogeneous spread from a distant site of infection. Tissue damage and systemic toxicity are believed to result from the release of endogenous cytokines and bacterial toxins. Due to the paucity of skin findings early in the disease, diagnosis is often extremely difficult and relies on a high index of suspicion. Definitive diagnosis is made at surgery by demonstration of a lack of resistance of normally adherent fascia to blunt dissection. Treatment modalities include surgery, antibiotics, and supportive care. Early and adequate surgical debridement and fasciotomy have been associated with improved survival. Initial antibiotic therapy should include broad aerobic and anaerobic coverage. Delays in diagnosis and/or treatment correlate with poor outcome, Mortality rates are as high as 76%.[1]

Case Follow-up

Patient was immediately started on broad-spectrum intravenous antibiotics and taken to surgery for emergency debridement. He was intubated and monitored in the surgical ICU postoperatively. Despite prompt treatment, the vicious flesh eating disease spread rapidly in front of everyone's eyes, separating the skin off his torso, exposing muscle layers under the skin flap from the right scapula down to the waistline. It turned this active young man who I just saw in my office a few hours prior to this chilling and gruesome scene. He succumbed to overwhelming sepsis, metabolic acidosis and multiple organ system failure the day after surgery. Surgical specimen culture returned positive for Group A streptococcus after his death. The rapid death of this previously healthy and energetic man left his family and friends in shock, utter disbelief and grief.

Conclusion

The lack of obvious skin wound or cellulitis made diagnosing necrotizing fasciitis difficult in this case. However his complaint of excessive pain when compared to a minor shoulder strain, ill appearance and Kussmaul breathing gave an ominous clue of serious ailment. He had a case of invasive streptococcal infection. Group A streptococcus is a common

bacteria for throat infection. These bacteria gained entry from the nasopharyngeal area then seeded around injured right shoulder hematogeneously causing fatal necrotizing fasciitis.

REFERENCES

1. **Green RJ, Dafoe DC, Raffin TA.** Necrotizing fasciitis. *Chest.* 1996 Jul;110(1):219-29. Review. PubMed PMID: 8681631.

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