



Necrotizing soft tissue infection as a sequela of hematogenously spread untreated Group A *Streptococcal* (GAS) pharyngitis during the COVID19 pandemic

Brennan Bowker MHS, PA-C, CPAAPA^{1,2} Andrea Ferraro MPAS, PA-C,¹ Elise Maro, PA-S,² Amanda McGinn PA-S,² Lydia Molnar, PA-S,² John DeFrancisco, PA-S,² Kristin Oliveira, MD^{1,3} Tyler J. Jones, MD^{1,3}

¹Yale New Haven Hospital, Department of Surgery, New Haven, CT
²Quinnipiac University, Department of Physician Assistant Studies, Hamden, CT
³Yale School of Medicine, Department of Surgery, New Haven, CT

Introduction

- Necrotizing soft tissue infections (NSTIs) are a class of rapidly progressing skin and soft tissue infections that are associated with high rates of morbidity and mortality¹
- NSTIs are commonly classified into three subtypes:
 - Type 1: polymicrobial²
 - Type 2: monomicrobial³
 - Type 3: *Vibrio* or *Aeromonas* spp⁴
- The most common causative pathogen of type 2 NSTI is Group A *Streptococcus*³
- GAS is more commonly responsible for bacterial pharyngitis which is easily treated with oral antibiotics^{5,6}
- The most common complications of untreated group A streptococcal pharyngitis are glomerulonephritis, scarlet fever, and rheumatic fever⁷
- Rare complications of GAS pharyngitis include hematogenously spread necrotizing soft tissue infections (NSTI) including myositis, fasciitis, and myofasciitis^{5,8}

Case Description

History of Present Illness

- A 20-year-male with a history of *primary sclerosing cholangitis* presented to the emergency department with 48 hours of left lower extremity (LLE) pain and swelling
- The pain was so intense that he was unable to walk due to it
- He denied any trauma but did note that his knee was swollen
- Additionally, the patient had been well until 10 days prior when he developed an upper respiratory infection (URI) with symptoms including sore throat, fatigue, and cough.
- A home COVID19 test was negative
- He was evaluated via telehealth and advised conservative management.
- His URI symptoms improved, however, he subsequently developed severe pain and swelling of his LLE refractory to home therapy, thus he presented to care.
- Prior to this, he was *never* seen in person (only telehealth)

Vital Signs:

T: 99.4°F HR: 109 bpm BP: 106/61 mmHg SPO2: 99%

Examination:

- Left lower extremity swelling with mildly streaking erythema anteriorly distal to the knee (figure 1), severe tenderness to palpation, and pain with passive dorsiflexion of the foot

Radiography:

- CT with marked fascial edema but no gas noted (figure 2)

Laboratory Analysis:

~~13.9~~
~~38.3~~ ~~274~~
~~41.1~~

129	97	16	97
4	21	1.3	

CRP: >300
LRINEC Score: 8

Discussion

- GAS infection is a known causative pathogen in NSTIs, however hematogenous spread is extraordinarily rare with only 21 reported cases⁸
- Distant NSTIs due to *Streptococcal* pharyngitis are usually seen in patients with chronic conditions like immunosuppressive states^{8,9}
- Mortality rates from NSTIs range from 11-22% and often associated with delay in diagnosis^{8,10}
- Healing fascia or muscle are more prone to hematogenous seeding by streptococcus in transient bacteremia¹¹
- This patient developed a type II NSTI from hematogenous spread secondary to untreated *Streptococcal* pharyngitis, which is considered an easily diagnosed and treatable condition
- A throat culture would have likely been offered had this patient been seen in person thus avoiding the subsequent complications and highlighting the limitations of telemedicine

Hospital Course

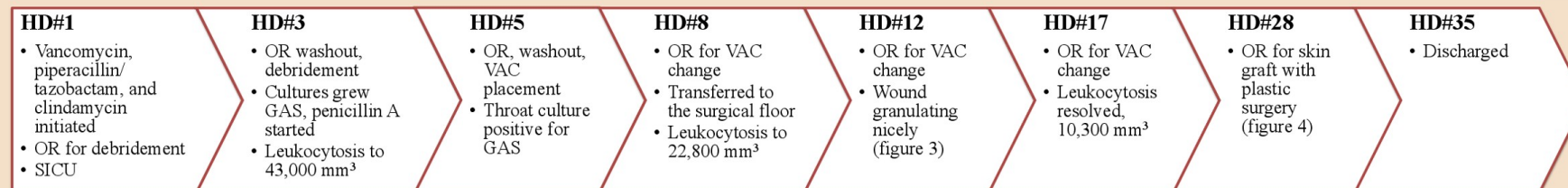


Figure 1: Mild LLE erythema



Figure 2: CT Scan LLE

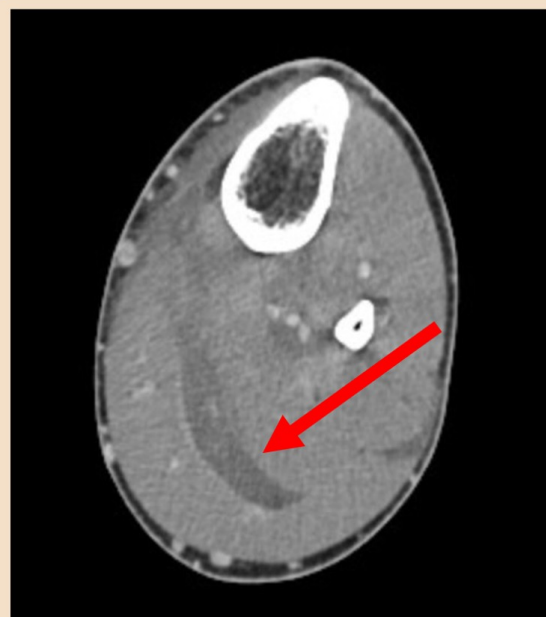


Figure 3: After Debridement



Figure 4: After Skin Graft



Conclusion

GAS pharyngitis is a common and treatable illness that can lead to complications including glomerulonephritis, scarlet fever, and rarely, NSTIs. This case highlights the importance of recognizing GAS pharyngitis as a potential source of necrotizing soft tissue infection and it underscores the limitations of telemedicine when a physical exam and diagnostic tests are crucial for diagnosis.

References

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