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Necrotizing Fasciitis – Time is of the Essence

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INTRODUCTION

Necrotizing fasciitis (NF) is a life threatening rapidly progressive soft tissue infection at the deep fascia level that carries a high mortality rate. There are approximately 700-1,200 cases of NF caused by group A. strep, the most common microbial pathogen, reported annually in the US since 2010 [1] with a mortality rate of up to 25% [2,3]. Without surgical intervention, the mortality rate is near 100%. The most common risk factors include diabetes (reported in up to 60% of cases), IV drug use history, malnutrition, and chronic alcohol abuse [4]. In about 50% of group A streptococcus cases, there is an associated toxic shock syndrome with multiorgan system failure [5]. Primary care plays a vital role as these providers represent the earliest opportunity to correctly identify and promptly intervene to improve mortality and amputation rates.

CASE REVIEW

History:

- 64 year old male presents to ER with rapidly worsening right leg pain for the last few hours
- Seen at PCP office the day before for RLE swelling for 1-2 days, but no erythema or pain at the time. He was sent home w/ Lasix and close follow-up
- Overnight, his RLE became increasingly painful, warm, and "changing color"
- Endorses fevers and chills
- Notable PMHx: severe malnutrition, anasarca, chronic B/L DVTs on Eliquis, chronic pancytopenia
- Denies any IV drug use, alcohol, or tobacco use

Physical Exam:

- Initial vitals: T 37.7 C, BP 70s/40s, HR 90s
- "Chronically ill, cachectic appearing w/ anasarca"
- Waxing and waning alertness but oriented x 3
- Labs: WBC 1.5K, Lactate 3.1, CRP 22, Procal 152

Assessment & Plan:

- Clinical picture strongly suggested NF
- Started on broad spectrum antibiotics including IV vancomycin, ceftriaxone, and clindamycin
- Quickly needed two pressors for BP support
- Urgent surgical consultation and transfer to larger multispecialty hospital

MANAGEMENT

Early surgical debridement may be associated with reduced mortality in patients with necrotizing fasciitis [6]

- Retrospective prognosis study evaluating 379 patients with Fournier's gangrene (NF of perineum)
- Patients either received surgical intervention within 2 or 5 hospital days
- Overall case fatality rate was 17%
- Early (within 2 hospital days) surgical intervention had significantly lower case fatality rate vs delayed (within 3-5 hospital days) by almost 40% (odds ratio [OR] = 0.38, P = 0.031)

May need repeat surgical debridement every 24-36 hours to gain complete source control [7]

Empiric antibiotics should cover for gram-positive (including MRSA), gram-negative, and anaerobic organisms [7]

- Includes carbapenem or piperacillin-tazobactam for widespread gram negative and anerobic coverage
- Vancomycin or Linezolid for MRSA coverage
- If organism is group A strep alone, can narrow to just penicillin G
- Criteria to discontinue antibiotics:
  - No further surgical debridement is necessary
  - Clinical improvement
  - Afebrile for 48-72 hours

Some evidence of IVIG to reduce 30 day mortality but not routinely recommended based on lack of high quality studies [7]

CASE FOLLOW-UP

- Patient admitted to the ICU
- Emergent surgical consultation obtained, and strong recommendation for urgent surgical debridement
- Surgeon: "high morbidity with surgery, high mortality without"
- Anticipated prolonged source after surgery, including several weeks of wound care, skin graft in 3-4 weeks, and 6-12 months of healing
- Patient initially declined. He was mentally sound, and notes say "*he decided that he has been having a lot of medical difficulties over the last couple of years and did not want to go through anything that profoundly difficult or invasive"*
- After 24 hours and discussion with his brother, patient ultimately agreed for surgery
- At this point, he was in multiorgan failure and infection had spread up to the groin
- Yet he remained mentally alert and oriented x 3

Disclosure Statement

Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

CASE FOLLOW-UP

Initial debridement and repeat bedside debridement

Extensive skin grafting 4 weeks later

Discharged after 60 day hospital admission, but then readmitted 2 weeks later for group A strep bacteremia

Subsequently required an above-knee-amputation

Days after extubation, patient expressed desire for comfort care and he passed a few days after

DISCUSSION

Two particular areas of the case highlight the importance of primary care even among a predominantly surgical issue.

The first is whether the patient would have had a better outcome if they were sent in to the ED by the PCP office the day before. He may have been able to avoid multiorgan failure by being on antibiotics early, and even if the patient was still hesitant for surgery this would have been earlier in his disease course. Yet in primary care the decision to send a patient to the ED is not always so clear cut.

The second is how crucial clarifying goals of care is among patients with significant comorbid conditions. This patient with his numerous medical conditions did not have a POLST or advanced directive on file. While it is difficult to know if he would have chosen "limited interventions," having a well documented goals of care discussion with a PCP could have helped with time sensitive difficult medical decisions.

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