

# Time is Tissue: A delayed diagnosis of necrotizing soft tissue infection

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## Clinical Presentation

Day 1	Day 2	Day 6	Day 7	Day 8
<b>Symptoms Begin</b>	<b>First Office Visit</b>	<b>Second Office Visit</b>	<b>Hospital Admission</b>	<b>ICU Transfer</b>
36 year old man with hypertension and diabetes develops edema around right ear. He had recently started Lisinopril.	Patient presents to outpatient clinic, receives oral anti-histamine.	Swelling progresses to involve right half of face, and an oral steroid burst is prescribed.	Edema now involves entire face, but without pain or erythema, prompting admission.	After elective intubation, patient is transferred to ICU. Vitals relatively stable with otherwise negative ROS.



Image 1: Coronal CT scan demonstrating diffuse facial edema.

### Learning Objectives

- Recognize and respond to atypical presentations of necrotizing fasciitis.
- Understand limitations of widely accepted clinical pearls and calculators commonly used for diagnosis.
- Acquire tools and management strategies to help quickly respond to, and reduce mortality of a typically life threatening disease.

### Objective Data

#### Vitals on Presentation:

- Afebrile, BP 146/97 mmHg, HR 135 bpm, RR 19/min and normal SpO2 on RA.

#### Physical Exam:

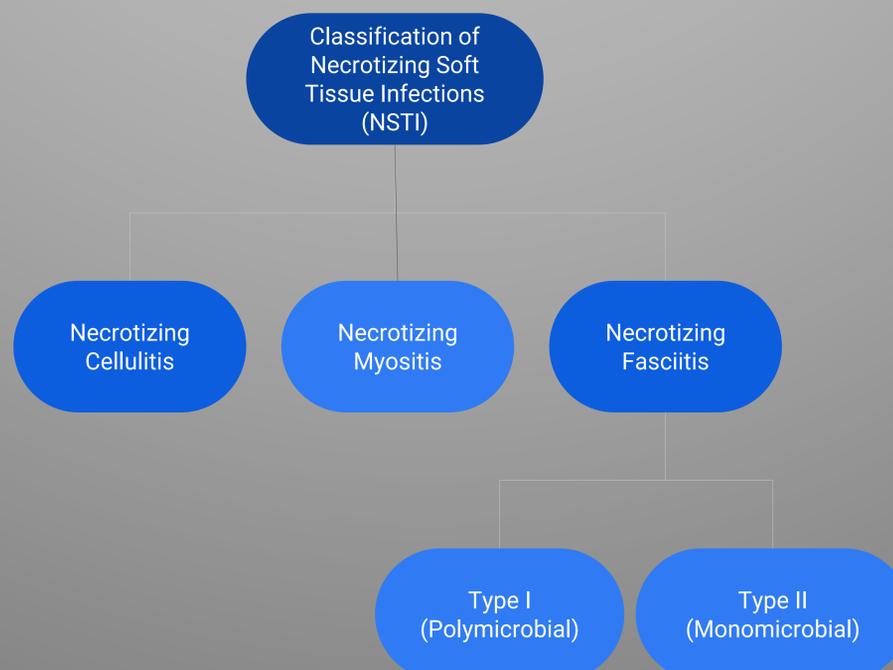
- Notable for diffuse, non-pitting edema of entire face, including orbits and anterior neck, without erythema, crepitus, or obvious open wounds.

#### Presenting Labs and Additional Studies:

- WBC 44, 500/mm<sup>3</sup>, normal Hgb and platelets, Sodium of 125 mg/dL, glucose of 297 mg/dL, lactate of 1.9 mg/dL, and all other chemistries within normal limits. LRINEC score of 5.
- Normal CXR and ECG, and CT of head and neck with diffuse soft tissue edema without focal gas or abscess.

### Differential and Diagnosis

- On initial presentation, concern was for allergic reaction, given absence of infectious signs and symptoms.
- As he had recently started Lisinopril, angioedema was strongly considered as well.
- Lab abnormalities and rapid clinical decline prompted surgical evaluation.
- Wound washout cultures were positive for *Streptococcus Pyogenes* and diagnosis was confirmed, which ultimately required repeated OR visits and prolonged antibiotics.



### Discussion

- The population adjusted incidence of NSTIs has increased by 91% between 1999 and 2007 with mortality as high as 45%.
- Up to 25% of patients present atypically without the classically taught findings such as fever, erythema, and pain out of proportion to exam.
- LRINEC (Laboratory Risk Indicator for Necrotizing Fasciitis) score >6 has sensitivity of 68.2% and specificity of 84.8%
- Prompt recognition is vital, with CT being favored imaging study and surgical exploration being necessary for diagnosis and management.
- Be aware of risk factors including immunosuppression and recent trauma, and have low threshold to start anti-biotics including clindamycin.

### References:

- Soltani, A., Best, M., Francis, C., Allan, B., Askari, M. and Panthaki, Z. (2014). Trends in the Incidence and Treatment of Necrotizing Soft Tissue Infections. *Journal of Burn Care & Research*, p.1
- Stevens, D. and Bryant, A. (2017). Necrotizing Soft-Tissue Infections. *New England Journal of Medicine*, 377(23), pp.2253-2265.
- Fernando, S., Tran, A., Cheng, W., Rochweg, B., Kyeremanteng, K., Seely, A., Inaba, K. and Perry, J. (2018). Necrotizing Soft Tissue Infection: Diagnostic Accuracy of Physical Examination, Imaging, and LRINEC Score: A Systematic Review and Meta-Analysis. *Annals of Surgery*, p.1.