

Ludwig's Angina: Patient Presentation and Initial Management

Case: 46 year-old female presents with a chief complaint of dental pain. Patient has pain in her right lower molar for approximately one week that is making it hard for her to chew 2/2 pain. She denies any odynophagia, dysphagia, fevers, nausea/vomiting, or shortness of breath. On exam, her vitals are within normal limits and there is tenderness to palpation, mild edema, and erythema surrounding the right lower 2nd molar with minimal trismus and mandibular tenderness. She is also noted to have a glucose of 334.

Question: What is the typical presentation and initial management of Ludwig's angina?

Background:

- Ludwig's angina is a **progressive cellulitis of the submandibular space that can rapidly progress to involve the floor of the mouth and neck** leading to death from airway compromise
- #1 cause is dental disease, with >90% of cases, especially **lower molar infections or recent extractions**¹
- The mandibular 2nd and 3rd molars are the most implicated since directly superior to the submandibular space²
- Additional risk factors include **diabetes, alcoholism, immunocompromised states, AIDS, malnutrition, trauma to the floor of the mouth**³
- Idiopathic cases have been reported in children with no apparent predisposing conditions⁴

Presentation:

- Most common presentation is **dysphagia, odynophagia, neck pain, or neck swelling**
- Less common presenting complaints are dysphonia, dysarthria, sore throat, drooling, tongue swelling
- Exam findings include **submandibular swelling, elevation of the tongue, elevation of the floor of the mouth, posterior displacement of the tongue, "woody" feel to the floor of the mouth, induration of the neck above the hyoid bone, fever, tenderness to neck palpation, trismus, subcutaneous emphysema**
- Usually no cervical lymphadenopathy or area of fluctuance is appreciated
- **Any crepitus with unilateral pharyngitis and recent dental disease** should be very concerning for Ludwig's angina
- Diagnosis is **clinical**, but a plain film or ultrasound may aid in determining the amount of soft tissue edema³

Management:

- Initial treatment includes **airway management** if any impending airway obstruction and high dose IV **antibiotics** to cover gram positive aerobes and anaerobes
- Retrospective study published in 2011 showed that 65% of patients diagnosed with Ludwig's angina had airway compromise
- Airway management begins with **awake nasotracheal intubation**, then awake tracheostomy, then emergent cricothyrotomy⁵

- Case reports suggest that a dose of 10 mg **dexamethasone and nebulized epinephrine** may help reduce airway edema and lead to improved intubation attempts⁴
- For IV antibiotics, **ampicillin, amoxicillin-clavulanate, or penicillin with metronidazole or clindamycin** have been suggested in case reports²
- Mortality is <10% if the patient is started early on aggressive antibiotics³

Conclusion: Ludwig's angina is a rapidly progressive cellulitis of the submandibular space that can have a high mortality if not promptly recognized and treated. Any difficulties with swallowing, swelling, crepitus, or signs of airway obstruction with recent dental disease should be highly suspicious for Ludwig's angina. Prompt treatment with airway management and IV antibiotics can greatly reduce mortality.

References:

1. Markovchick, Vincent J., Peter T. Pons, and Katherine M. Bakes. "Dental and Oral Surgical Emergencies." *Emergency Medicine Secrets*. 5th ed. St. Louis, MO: Elsevier/Mosby, 2011.
2. Hodgdon, Alan. "Dental and Related Infections." *Emergency Medicine Clinics of North America* 31.2 (2013): 465-80.
3. Rosen, Peter, John A. Marx, Robert S. Hockberger, and Ron M. Walls. "Ludwig's Angina." *Rosen's Emergency Medicine Concepts and Clinical Practice*. 8th ed. Vol. 1. Philadelphia, PA: Elsevier/Saunders, 2013. 972-73.
4. Saifeldeen, K., and R. Evans. "Ludwig's Angina." *Emergency Medicine Journal* 21.2 (2004): 242-43.
5. Kassam, Karim, Ashraf Messiha, and Manolis Heliotis. "Ludwig's Angina: The Original Angina." *Case Reports in Surgery* (2013): 1-4.
6. <http://www.ncbi.nlm.nih.gov/pubmed/23433016>
7. <http://www.ncbi.nlm.nih.gov/pubmed/21031047>
8. <http://www.ncbi.nlm.nih.gov/pubmed/17933483>