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Handheld Bedside POCUS in the Evaluation of Neck Swelling: A Case of Ludwig's Angina

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Handheld Bedside POCUS in the Evaluation of Neck Swelling: A Case of Ludwig's Angina

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Abstract:

Ludwig's angina is a rare and life threatening cellulitic infection, first described by German physician, Wilhelm Frederick Von Ludwig in 1836, as a gangrenous infection of the soft tissue floor of the mouth and neck.² The potential to spread rapidly to contiguous tissues surrounding the upper airways, notably the glottis, resulted in Ludwig's angina carrying a high mortality rate near 50% in the pre antibiotic era.¹ necessitates rapid detection and management to assure respiratory compromise does not occur. This case study is novel as it illustrates handheld bedside POCUS utilization in diagnosing Ludwig's Angina.

Case Presentation:

A 50 year old male with a past medical history of hypertension presented to the ER for complaint of neck pain. The patient stated that he noticed anterior neck pain upon waking up. He also noted swelling to left submandibular region. He denied any trismus, drooling or difficulty breathing, but did endorse some difficulty eating & pain on swallowing. There were no recent sick contacts that he noted. He denied any tooth pain, recent dental procedures or dental carries in the past. He denied any fever, chills, diaphoresis, chest pain, lightheadedness, dizziness, cough, shortness of breath or congestion. Vital signs were as follows BP 144/88 mmHg, HR 107 beats per minute, RR 18 breaths per minute and temperature 100.1 F. His pulse oximetry was O2 100%, His physical exam was negative for stridor, drooling, trismus, uvula or tongue deviation. No peritonsillar abscesses or dental carries were appreciated. On neck exam there was left sided submandibular swelling with mild tenderness to palpation the of anterior neck. The cervical spine had a normal range of motion. The pulmonary exam negative for wheezing rales, rhonchi, or stridor and the patient had a normal respiratory effort. Handheld Bedside POCUS was performed for further evaluation of swelling, revealing a possible abscess/enlarged lymphatic node.

CT imaging was also consistent with Ludwig's angina. OMFS was consulted and patient was started on antibiotics. The patient was then transferred for OMFS evaluation. External documentation revealed a dental extraction was performed. Unasyn was continued. The patient did not require surgical incision and drainage. Patient was ultimately discharged on Augmentin 875-125mg BID for 7 days.

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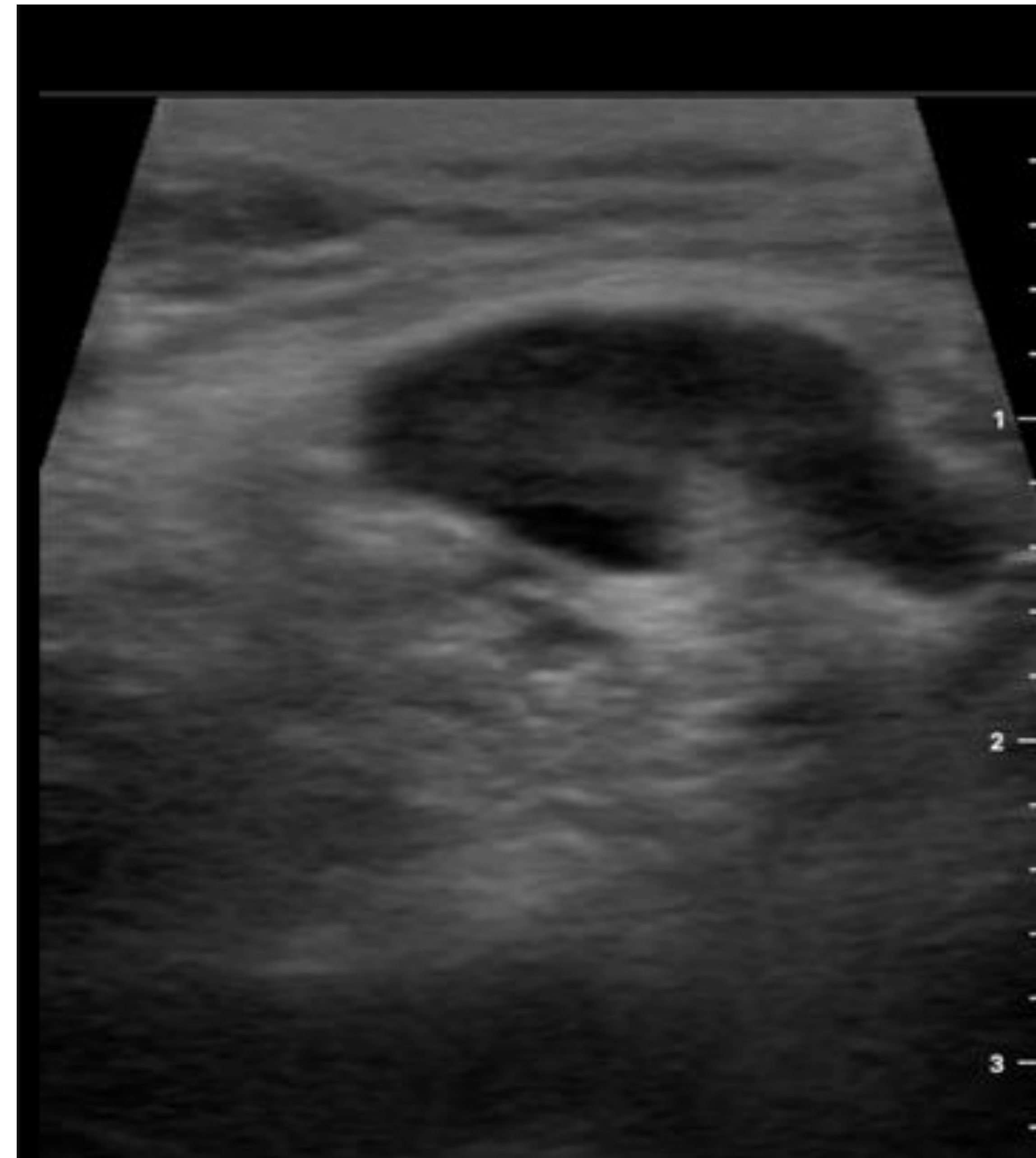


Figure 1: Sagittal View of Submandibular Space

Discussion:

Pathophysiology:

Ludwig's Angina is a rapidly spreading gangrenous infection of soft tissues in the mouth floor as well as neck with potential to spread and cause respiratory compromise. The usual sequence in which infectious spread occurs usually arises from the 2nd or 3rd lower molar. 2,4 From here the infection spreads contiguously from the submandibular space into the sublingual space of the same side. next, the infection continues to spread to encompass the contralateral sublingual and submandibular space as well as spreading caudally and posteriorly. Infection from the sublingual space spreads posteriorly in the substance of the tongue in the cleft between the hypoglossus and genioglossus muscles. From here, infection reaches the epiglottis which causes edema of the glottis and ultimately respiratory obstruction.⁵ Due to the aggressive and rapid nature of Ludwig's Angina, the need for rapid detection and management is evident.

Discussion: (continued)

The typical presentation begins with a patient arriving with a chief complaint of neck swelling, throat pain, change in voice or dyspnea. Approximately 1/3 of cases are associated with systemic illnesses, commonly diabetes and HIV, and are almost always associated with poor dentition and dental carries with even greater incidence in those with recent dental procedures.² The gold standard for diagnosis is a Contrast CT of face and soft tissue neck, to assess for abscess/fluid collection. However, this case also illustrates the use of handheld bedside POCUS in Ludwig's angina. Basic labs such as CBC & blood cultures should be ordered as well for further evaluation of Leukocytosis and infectious etiology.

The mortality rate of Ludwig's is cited as 8-10% .¹ The mainstay of treatment are broad spectrum antibiotics and source control such as dental extraction. The infection is often polymicrobial, but generally isolated to *Streptococci viridans*, *Staphylococcus aureus*, and *Staphylococcus epidermidis*, Augmentin/Unasyn, metronidazole, clindamycin, and ciprofloxacin are the antibiotics of choice.³ If a phlegmon is present causing respiratory compromise, and airway should be secured & surgical drainage should then be performed. Trismus and tongue deviation or swelling complicate direct laryngoscopy.⁴

Conclusions:

In the clinical setting of recent dental extractions, or dental caries, notably in immune compromised individuals, those presenting with neck or throat discomfort should have Ludwig's angina on the differential. CT imaging, or as in this case, handheld bedside ultrasound can be performed to help aid in the diagnosis of this disease process. Prompt imaging and antibiotic initiation can be all that is necessary to decrease mortality and significantly reduce the chance for respiratory compromise.

References:

1. S, Cha D, Meyer C, et al. (August 21, 2017) Ludwig's Angina. Cureus 9(8): e1588. doi:10.7759/cureus.1588
2. Balasubramanian S, Elavenil P, Shanmugasundaram S, Himarani J, Krishnakumar Raja V B. Ludwig's angina: A case report and review of management. SRM J Res Dent Sci 2014;5:211-4
3. Kassam K, Messiha A, Heliotis M. Ludwig's Angina: The Original Angina. Case Rep Surg 2013 Article I 0974269, 4 Pages
4. An J, Madeo J, Singhal M. Ludwig Angina. [Updated 2022 Oct 10]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-
5. Seward GR, Malcolm H, David AM. Killey and Kay's Outline of Oral Surgery. Part 1. 2nd ed. Bristol: Wright; 1987. p. 139-40