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General Medicine

ANGINA AGRANULOCYTICA REVISITED: A 21ST-CENTURY ENCOUNTER WITH A FORGOTTEN ENTITY

KEY WORDS: Angina, Agranulocytosis, Leukopenia

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ABSTRACT

Ludwig's angina is a rapidly progressive, potentially life-threatening cellulitis of the submandibular, sublingual, and submental spaces. Agranulocytosis, a rare hematologic condition marked by a dangerously low neutrophil count, has historically been described in association with oropharyngeal infections but is seldom reported in modern clinical settings. This case highlights an unusual co-presentation of Ludwig's angina with severe agranulocytosis in the absence of known predisposing factors.

INTRODUCTION

Ludwig's angina (LA) is a potentially life-threatening, rapidly spreading cellulitis that primarily affects the submandibular, sublingual, and submental spaces of the neck. The condition is marked by progressive soft tissue edema in the floor of the mouth and neck, which can result in posterior displacement of the tongue and eventual airway obstruction [1,2]. Before the advent of antibiotics, Ludwig's angina was associated with high mortality; however, even today, mortality remains approximately 8% despite modern advances in antimicrobial therapy and surgical techniques [3,4].

The most common cause of LA is odontogenic infections, particularly involving the mandibular molars. Less common causes include peritonsillar or parapharyngeal abscesses, oral trauma or piercings, mandibular fractures, and oral malignancies [5]. Prompt identification and treatment—including airway management, antibiotic therapy, and possible surgical drainage—are crucial.

In this report, we present a rare case of Ludwig's angina complicated by agranulocytosis in the absence of clear predisposing factors. The agranulocytosis appears to be secondary to the infection, representing a unique clinical scenario.

Case Report

A 64-year-old female presented with a 3-day history of throat pain, dysphagia, and progressively worsening neck swelling. The throat pain was sharp and exacerbated by eating, and she reported difficulty swallowing solids more than liquids. The swelling began on the right side and progressed to the midline, accompanied by hoarseness, a cough, mild breathing difficulty, and recent-onset snoring. She also had a recent fever.

Her medical history included bronchial asthma and hypertension for the past 10 years. She reported drug allergies to penicillins, sulfa drugs, NSAIDs, and antiplatelet agents. Surgical history included ovarian cyst removal, hysterectomy, and bilateral lung bullectomy with right lower lobectomy. She denied recent trauma or dental issues.

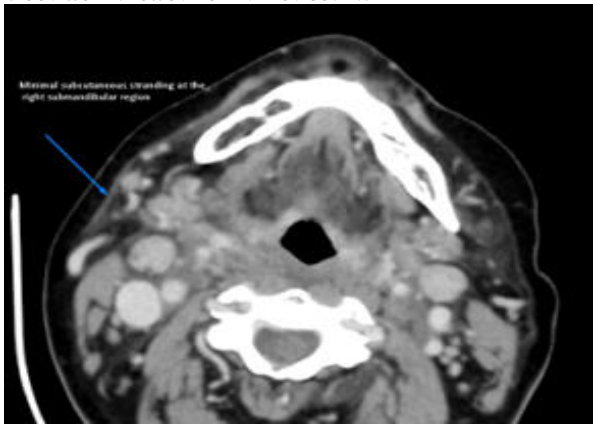
On examination, she was febrile (100.4°F), tachypneic (RR 22/min), and normotensive (BP 110/70 mmHg). A diffuse, tender swelling was observed on the right side of the neck with overlying warmth and palpable bilateral jugulodigastric lymphadenopathy. The tongue appeared bulky. She maintained oxygen saturation of 98% on room air.

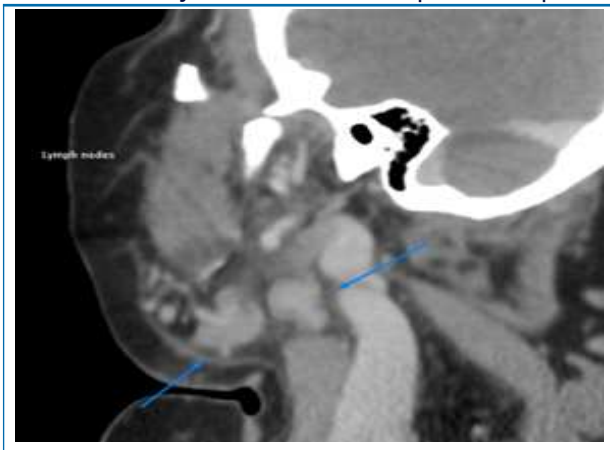
Laboratory tests revealed hemoglobin of 10.5 gm/dL, severe leukopenia (TLC: 510 cells/μL), and a normal platelet count (2.3 lakh/μL). CT scan of the neck indicated reactive lymphadenitis; CT thorax showed mild fibrosis in the right upper lobe without pleural or mediastinal involvement.

Initial management included IV levofloxacin and oral fluconazole. Due to severe neutropenia, hematology consultation was obtained. Peripheral smear revealed normocytic normochromic anemia and leukopenia. The patient was started on IV granulocyte colony-stimulating factor (G-CSF) 500 mcg, IV meropenem, tigecycline, and teicoplanin (later de-escalated).

Pulmonology initiated nebulization and prescribed oral acebrophylline and acetylcysteine. Repeat CT thorax on day 5 revealed bilateral lung nodules and mild fibroatelectasis. Fluconazole was replaced with voriconazole. Bone marrow aspiration revealed hypocellularity with myeloid suppression.

Following broad-spectrum antibiotic and antifungal therapy, the patient's leukocyte count normalized over five days. Clinical symptoms improved significantly, and she was discharged in stable condition on day 10. Discharge medications included levofloxacin, voriconazole, pantoprazole, and chlorhexidine mouthwash. Follow-up blood work showed normalized counts.





CT showing minimal subcutaneous stranding at the right submandibular region, alongwith lymphadenopathy

DISCUSSION

Ludwig's angina is a deep neck space infection characterized by cellulitis of the submandibular, sublingual, and submental spaces. Its aggressive progression can lead to airway obstruction, necessitating rapid diagnosis and intervention. While commonly of odontogenic origin, other causes include mandibular trauma, oral lesions, or systemic factors such as immunosuppression [1,5].

In our case, the patient lacked identifiable etiological or predisposing factors such as diabetes, poor oral hygiene, or immunocompromised status. The origin may have been lower respiratory tract involvement, suggested by persistent cough and lung findings. Clinical features including dysphagia, voice change, and neck swelling were consistent with Ludwig's angina [7].

Contrast-enhanced CT is the diagnostic imaging modality of choice [9], although airway stabilization remains the first priority. The polymicrobial nature of the infection necessitates broad-spectrum antimicrobial coverage [10]. Our management was complicated by the patient's extensive drug allergies, making selection of effective antimicrobials challenging.

A remarkable feature of this case was the presence of agranulocytosis, with no prior history or identifiable drug cause. Bone marrow biopsy revealed myeloid suppression. We hypothesize that the agranulocytosis was infection-induced, reminiscent of "angina agranulocytosis" described in earlier literature—typically in middle-aged females with oropharyngeal infections and leukopenia [12].

The normalization of white cell counts following infection control and G-CSF therapy further supports a reactive etiology. This highlights the need for cautious evaluation of agranulocytosis in the context of acute infection to avoid misdiagnosis and unnecessary interventions.

CONCLUSION

This case highlights a rare and complex clinical presentation: Ludwig's angina without classical risk factors, complicated by severe agranulocytosis. Infections may occasionally present with secondary bone marrow suppression and leukopenia. A thorough evaluation is essential to distinguish reactive causes from primary hematologic disorders. Awareness of such rare associations is important for early recognition and appropriate management.

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