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Case Study

Case Report on Rapidly Progressive Ludwig's Angina

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ABSTRACT

Ludwig's angina is a rapidly progressive, potentially life- threatening cellulitis of the submandibular, submental and sublingual spaces. It is characterized by inflammatory oedema in submandibular, submental or sublingual region rather than abscess which can lead to airway obstruction. Patients with comorbid conditions like diabetes mellitus are at higher risk because of delayed wound healing and higher risk of infections due to impaired immune system. Other factors such as trauma, poor oral hygiene and dental infections can lead to deep neck space infections. Ludwig's angina is considered as medical and surgical emergency which requires continuous monitoring and airway intervention. Early diagnosis and management of disease can prevent airway obstructions and fatal life-threatening complications. Airway obstruction is the most serious complication which can occur suddenly and this can even occur in patients who were clinically stable initially. The risk of developing airway obstruction is due to increased oedema which extends to the surrounding tissues and epiglottis. These further leads to dysphagia, muffled voice, and potentially respiratory distress. After a recent fall, a 65-year-old man with a history of type 2 diabetes mellitus and hypertension developed increasing pain and oedema in the right submandibular area. He showed extensive oedema and induration over the right submandibular and submental regions without initial airway obstruction, but he was hemodynamically stable upon evaluation. Significant leukocytosis with neutrophilic predominance, raised ESR and CRP levels, elevated blood sugar levels, and accelerated prothrombin time were also found in laboratory examinations. Diffuse infectious inflammatory oedema was seen on neck ultrasonography. Broad spectrum antibiotics, corticosteroids, an emergency incision, drainage, and stringent glucose control and monitoring were administered to the patient. The patient was treated with oral antibiotics, insulin treatment, and supportive drugs after demonstrating clinical improvement with a decrease in swelling and inflammatory markers. In order to minimize life-threatening consequences, this case emphasizes the significance of early detection, active multidisciplinary management, and careful airway monitoring in diabetic patients with deep neck space infections.

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INTRODUCTION

Ludwig's angina is a form of deep neck infection characterised by spreading swelling in submandibular spaces. It is distinguished from localized suppurative infections by quickly spreading cellulitis with widespread soft tissue involvement, which may cause the floor of the mouth's typical anatomical features to become distorted. Because of this anatomical connection, airway compromise is the most dangerous and unpredictable consequence, frequently requiring immediate medical attention.

Due to compromised host defence systems, patients with underlying comorbidities such diabetes mellitus, hypertension, and advanced age are more likely to experience severe disease development. Despite initially steady vital signs, the infection may worsen in some people, delaying diagnosis and treatment. To avoid consequences such airway obstruction, sepsis, and mediastinal dissemination, early detection, adequate antibiotic therapy, stringent control of underlying diseases, and prompt surgical intervention when necessary are crucial. This case study highlights the significance of early intervention and close monitoring in high-risk patients by describing the clinical presentation, diagnostic strategy, and multidisciplinary therapy of a patient with Ludwig's angina.

CASE REPORT:

A 65-years-old male patient was admitted to general medicine department with complaints of pain and swelling in submandibular region. The swelling was progressive and gradually increases in size and associated with localized tenderness and discomfort. He also had a recent history of fall at home which was considered as a possible precipitating factor for soft tissue injury and secondary infection. The patient also has a past medical history of hypertension and type-2 diabetes mellitus on regular treatment with T. CILACAR-T (CILNIDIPINE + TEMISARTAN) 10/40mg P/O 1-0-1, T. GLYCINORM (GLICAZIDE + METFORMIN) 80/500mg P/O 1-0-1, T. VOGLIBO (VOGLIBOSE) 0.3mg P/O OD. Both of these comorbidities are established risk factor for increases susceptibility to deep neck infection. The patient was conscious, oriented, heart sounds were heard, chest was clear, was able to move all limbs and GI was soft and nontender. On local examination of neck revealed swelling over the right submandibular and submental region with signs of inflammation. During admission there were no signs of airway obstruction such as dyspnea, drooling and voice changes. The patient was considered at high risk for airway obstruction and monitored. Based on laboratory investigations and ultrasonography of neck the patient was diagnosed with Ludwig's angina.

Table:1 laboratory investigation

PARAMETERS	VALUES
Total count	30800cells/mm^3
Polymorphs	88.3%
ESR	105mm/hr
RBS	300mg/dl
HbA1c	11.5%
CRP	146%
Prothrombin time	16.9seconds

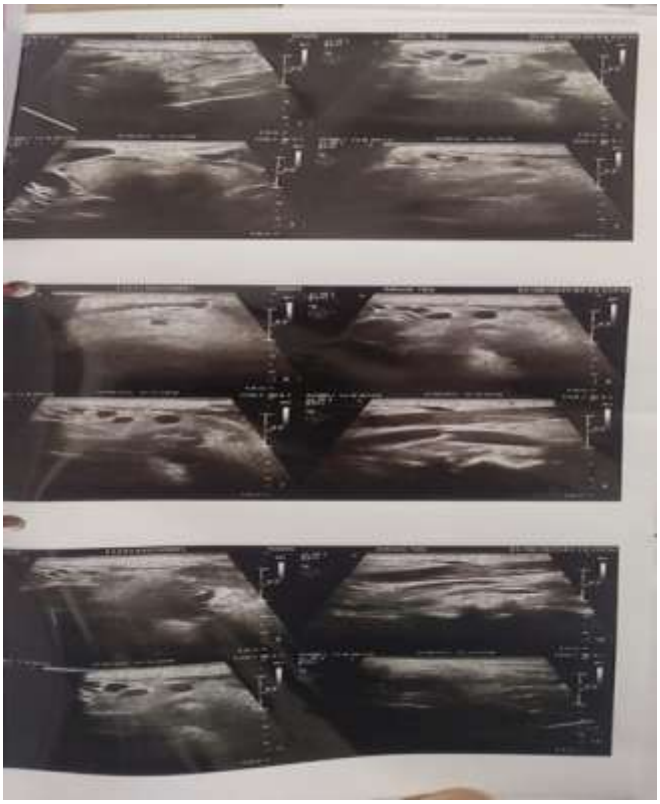

Fig:1

Fig:1 Ultrasonography of neck revealed diffuse infective inflammatory changes with oedema involving in the right submandibular and submental region extending to floor of the mouth with reactive sub-centimetric lymphadenitis and multifocal small infective foci.

The patient was treated with INJ. TETANUS TOXOID, INJ. LIDOCAINE, INJ BARYZONE, INJ. DEXAMETHAZONE as stat medications. An emergency incision & drainage (I&D) procedure was performed under anasthesia. The patient was shifted to medical intensive care unit for close monitoring and later transferred to room.

Table:2 Treatment chart

SR NO	DRUG	DOSE	FREQYENCY
1.	Inj. CEFOPARAZONE+SULBACTUM	1.5gm	BD
2.	Inj. METRONIDAZOLE	500mg	Q8H
3.	Inj. PARACETAMOL	1gm	Q8H
4.	Inj. PANTOPRAZOLE	40mg	OD
5.	Inj. DEXAMETHAZONE	8mg	BD
6.	Tab. CILACAR	40mg	1-0-1
7.	Inj. SOLUBLE INSLULIN+ISOPHANE INSULIN	50/50	26-0-16 units
8.	Inj. INSULIN DEGLUDAC+ INSULIN ASPART	70/30	16 units at 10pm

DISCUSSION:

In this instance, an older patient with poorly managed diabetes mellitus has the characteristic manifestation of Ludwig's angina. The patient's symptoms included diffuse edema that extended to the floor of the mouth without the formation of an abscess, increased submandibular swelling,

discomfort, and elevated inflammatory markers. Because hyperglycaemia affects neutrophil activity, lowers host immunity, and slows wound healing, diabetes most certainly contributed to the infection's quick progression. [1-3]

Comparison with other cases:

Odontogenic infections, particularly those originating from the second or third mandibular molars, account for the majority of documented occurrences of Ludwig's angina. On the other hand, the patient's recent history of soft tissue injuries and falls may have contributed to the infection. This patient showed significant leukocytosis, elevated CRP, high ESR, and poor glycemic control—all of which are linked to severe illness and a higher risk of complications—much like previously documented diabetic instances. This patient's ultrasonography revealed generalized cellulitis and edema without a well-formed abscess, contrary to several documented examples that report abscess formation necessitating drainage. Despite this, fascial space decompression is frequently required even in non-suppurative diseases, hence emergency incision and drainage were carried out. This strategy is in line with other serious cases where prompt surgery prevented mediastinal spread and airway compromise. [4-6]

Ludwig's angina frequently manifests as bilateral submandibular edema, elevation of the floor of the mouth, dysphagia, and possible airway impairment, according to earlier research. On the other hand, the patient in this instance had inflammatory edema and unilateral submandibular swelling, but there was no visible abscess formation on imaging. Similar case studies have demonstrated the usefulness of imaging modalities like computed tomography and ultrasonography in detecting diffuse cellulitis and assessing the degree of fascial space involvement. [7-8]

Prognosis:

Ludwig's angina prognosis primarily depends on how quickly the condition is identified and treated. Airway blockage, septicaemia, descending mediastinitis, and even mortality might result from delayed detection. Due to the possibility of severe systemic involvement, patients with diabetes, advanced age, high inflammatory markers, and prolonged prothrombin time typically have a worse prognosis. [9-11]

CONCLUSION:

This case demonstrates that Ludwig's angina is a deep neck area infection that progresses quickly and can be fatal if left untreated. This patient's advanced age and uncontrolled diabetes mellitus exacerbated the severity and danger of complications. Diffuse inflammatory edema including the submandibular and submental areas was sufficient to require immediate attention even in the absence of a well-formed abscess. A successful outcome was achieved by early diagnosis backed by laboratory results and ultrasound, timely surgical decompression, broad-spectrum antibiotic therapy, corticosteroids, and rigorous glycemic control. In order to lower morbidity and avoid airway compromise, this case highlights the significance of keeping a high index of suspicion in high-risk patients and implementing a multidisciplinary strategy.

PATIENT CONSENT:

Written informed consent was obtained from the patient for publication of this case report.

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