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Case Report

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A rare case: Descending necrotizing mediastinitis

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Abstract:

Descending necrotizing mediastinitis (DNM) is one of the most critical, and often lethal forms of mediastinitis that develop because of the downward spread of deep neck infections. In this article, we wanted to discuss a case report with DNM secondary to retropharyngeal abscess detected in the emergency department, in accordance with the literature. A 51-year-old male patient presented to the hospital with complaints of fever, sore throat when swallowing, and swelling in the neck. He had no history of any disease, trauma, or surgical intervention. On physical examination of our patient, diffuse hyperemia and edema in the pharyngeal area were detected with swelling, edema, redness, and warmth in the neck, which can be felt on both sides of the trachea with palpation. DNM diagnosis was made by detecting retropharyngeal abscess extending to the mediastinum, mediastinal air images and increased density in adipose tissue with intravenous (IV) contrast-enhanced neck and thorax computed tomography (CT). DNM patients most frequently present with complaints of fever, odynophagia, dyspnea, cervical edema, and pain. The most important clinical finding is edema and hyperemia in the pharynx. Our patient presented to the emergency department with complaints of fever, sore throat when swallowing, and neck swelling, and on physical examination, edema, hyperemia, and temperature increase in the neck region were observed together with hyperemia and edema in the pharyngeal area. Laboratory examinations showed high leukocyte count and C-reactive protein levels. The patient was diagnosed with DNM by performing IV contrast-enhanced cervicothoracic CT imaging and underwent an operation. It should be borne in mind that patients who present to the emergency room with fever, odynophagia, and neck swelling may have a rare but seriously life-threatening DNM.

Keywords:

Emergency room, mediastinitis, retropharyngeal abscess

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Introduction

Acute mediastinitis is a rare and life-threatening infection of the mediastinal connective tissue that fills the intrapleural spaces and surrounds the median thoracic organs. One of the most serious forms of mediastinitis is descending necrotizing mediastinitis (DNM), which is caused by the downward spread of deep neck infections by gravity and negative intrathoracic pressure.[1] Isolated mediastinitis is mostly caused by esophageal perforation and postoperative infections after sternotomy incisions in patients undergoing cardiac surgery, while DNM originates from odontogenic, pharyngeal, and other cervicofacial foci of infection.[2] In this article, we aimed to discuss a case with DNM secondary to retropharyngeal abscess detected in the emergency room, in accordance with the literature.

Case Report

A 51-year-old male presented to ED with worsening fever, sore throat when

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swallowing, and swelling in the neck over the last 7 days. The general status of the patient – who has no illness; trauma or surgical intervention history – was moderate; he was conscious and cooperative. The patient's vital parameters were as follows: blood pressure 112/74 mmHg, pulse rate 136 beats/min (min), body temperature 38.7°C, respiratory rate 16/min, and oxygen saturation (SaO_2) 98%. On physical examination, swelling, edema, redness, and increased temperature were detected in the neck region, which can be felt on both sides of the trachea, extending from the level of angulus mandibularis to the level of both clavicles, more prominently on the right lateral part of the neck. In addition, small mass lesions thought to be bilateral cervical lymphadenopathy in the neck region were palpated. The mouth opening distance was narrow, diffuse hyperemia, and edema was observed in the pharyngeal area.

The patient was admitted to the observation unit and treated with intravenous (IV) saline and antibiotherapy (ceftriaxone and metronidazole). In blood laboratory tests, leukocytes were found to be 14.56 10^3/uL, C-reactive protein (CRP) 215.4 mg/L, and D-dimer 1.1 ug/mL. In superficial ultrasonography of the neck, concentrated liquid, in which air images were observed where it starts from bilateral neck Level II and extends to the paratracheal area and Level IV. It measured 23 mm in the paratracheal area posterior to the thyroid gland on the right at its thickest point, and 12 mm in the anterior of the thyroid gland on the left. In the IV contrast-enhanced neck and thorax computed tomography (CT), taken for differential diagnosis, retropharyngeal abscess extending to the mediastinum, mediastinal air images, and increased density in the adipose tissue were detected [Figure 1].

After the consultation with thoracic surgery and otorhinolaryngology, abscess drainage of the patient who was taken into operation was provided, and necrotizing materials were debrided.

Detailed written patient consent was obtained from the patient himself at the time of admittance for this case report.

Discussion

DNM is seen more often in males, around the age of 48–52, and most commonly develops secondary to pharyngeal infections and peritonsillar abscesses.[3,4] Our patient's gender was male, age 51, and the etiologic cause was a retropharyngeal abscess, which is coherent with the literature.

Patients with DNM are often associated with comorbidities and predisposing factors with low tissue oxygenation such as cardiovascular disease, chronic lung disease, diabetes mellitus, malignancy, renal failure, neurological disorders, chronic multi-substance, alcohol and nicotine abuse, severe obesity, peripheral arterial occlusive disease, or neck radiotherapy. In addition, 13%–30% of the patients do not have any comorbidities or predisposing factors.[4] Our case did not also have any comorbidity or predisposing factors.

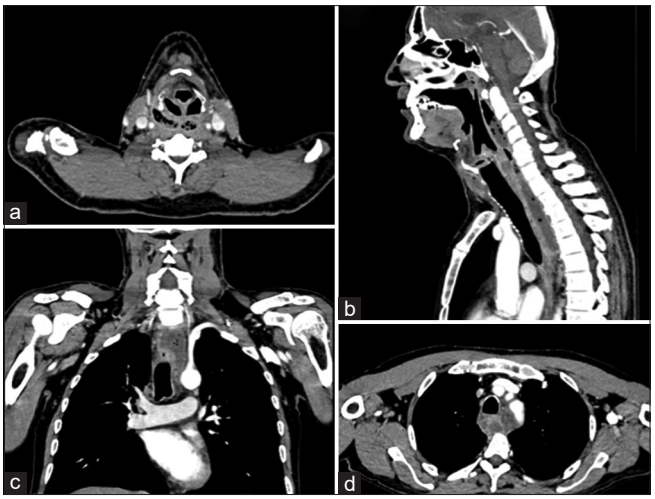

Figure 1: Coronal, sagittal, and transverse section images of DNM in the neck and thorax CT of the patient (a). Free air images within retropharyngeal abscess; (b). Retropharyngeal abscess and mediastinitis, sagittal view; (c). Free air images in the mediastinal area and increased density in adipose tissue; (d). Increased density in mediastinal adipose tissue) (arrows). CT: Computed tomography, DNM: Descending necrotizing mediastinitis

The retropharyngeal space drains into the posterior mediastinum. Negative intrathoracic pressure, gravity, and breathing contribute to this spreading process.[5] Therefore, the development of clinical symptoms and signs in DNM is related to this mechanism. Patients most frequently present with complaints of fever, odynophagia, dyspnea, cervical edema, and pain. The most important clinical finding is pharyngeal edema and hyperemia.[4] The patient presented to the emergency department with complaints of fever, sore throat when swallowing, and neck swelling, which is consistent with the literature. On physical examination, edema, hyperemia, temperature increase in the neck region, and hyperemia and edema were observed in the pharyngeal area.

Laboratory findings are not specific. The leukocyte count, CRP, and procalcitonin levels are usually high.[5] In the laboratory examinations of the presenting patient, the leukocyte count and CRP level were found to be high; the procalcitonin level was not checked. The preferred radiological imaging is cervicothoracic CT with IV contrast for diagnosis, planning for surgical drainage, and postoperative follow-up. The use of CT is supported for inpatient follow-up, especially if the clinical condition

and inflammatory markers do not improve after the operation.[5,6] Due to clinical suspicion, the diagnosis of the patient was confirmed by IV contrast-enhanced cervicothoracic CT imaging, and it was a guide in the decision and planning of the operation.

The diagnostic criteria of DNM were first defined by Estrera *et al*.[7] in 1983:

1. Clinical signs of severe cervical infection
2. Revealing characteristic radiological findings
3. Evidence of necrotizing mediastinal infection during the operation, postmortem examination, or both
4. Revealing the relationship between oropharyngeal or cervical infection with the development of the necrotizing mediastinal process.[8]

Our case met these diagnostic criteria in accordance with the literature, and the diagnosis was finalized.

DNM treatment is surgical abscess drainage, and debridement with the support of broad-spectrum IV combined antibiotic therapy to include aerobic and anaerobic bacteria after airway management is established.[9] When patients do not receive appropriate and adequate treatment, they may enter the process of sepsis and multi-organ failure. The mortality rate ranges from 16% to 80%.[10,11] The patient was operated on with the support of IV combined antibiotic therapy, abscess drainage was provided, and necrotizing materials were debrided. The patient, who did not develop any complications after the operation, was discharged from the hospital with full recovery.

Conclusion

It should be kept in mind that patients who present to the emergency department with fever, odynophagia, and neck swelling may have a rare but seriously life-threatening DNM. Rapid diagnosis, early antibiotic therapy, and surgical drainage may contribute to reduced mortality by protecting patients from sepsis and multi-organ failure.

Author contributions statement

- BMA: Conceptualization (lead); resources (lead), writing-original draft (equal), writing-review, and editing (equal)
- EG: Writing-original draft (equal), writing-review, and editing (equal).

Conflicts of interest

None Declared.

Decleration of patient consent

The authors clarify that they have obtained all appropriate patient consent forms. In the consent form, the patient has given his consent for sharing his application status, his physical examination findings, his vital signs, and his radiological imaging study results which can also be published in the journal. The patient realizes that his name and initials will not be published, and due efforts will be made to conceal the identity, but anonymity can not be guaranteed.

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