

Subacute Descending Necrotizing Mediastinitis

Descending Necrotizing Mediastinitis Drained Via Computed Tomography Guided Catheter

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Abstract

Descending necrotizing mediastinitis (DNM) is a rare disease and mainly related to the spread of oropharyngeal and odontogenic infections into the mediastinum. DNM is a life-threatening disease with a reported mortality of 40-50%. The mainstays of treatment of DNM are surgical drainage and appropriate antibiotic therapy. However, there are a lot of speculations concerning the ideal form of surgical approach in the patients with DNM. We report a case of DNM secondary to Ludwig's angina with fistula to the left pleural cavity. The

drainage of the mediastinum was achieved by the computed tomography guided catheter. The left pleural cavity was also drained by percutaneous catheter. A thorax computed tomography obtained one year after the treatment revealed no sequela. We think that, if the patient is in good condition, even complicated DNM can be treated without aggressive surgery.

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Key words: *Descending necrotizing mediastinitis; therapy; computed tomography guided drainage.*

Abbreviation: *DNM = Descending necrotizing mediastinitis.*

Introduction

The most common cause of acute mediastinitis is oesophageal diseases (1). Acute mediastinitis occasionally develops as a complication of cervical or odontogenic infections and referred to as descending necrotizing mediastinitis (DNM). DNM is the most lethal form of mediastinitis (2). Early diagnosis, aggressive drainage and adequate antibiotic coverage are the basis of therapeutic success (2).

Mediastinal drainage is an essential procedure in the treatment of the patients with DNM. However, the surgical management is controversial. Although some investigators (3-5) advocate aggressive surgical management, others (6) advocate computed tomography or ultrasound guided needle aspirations.

We are reporting a case of DNM that the mediastinal abscesses were drained nonsurgically using a computed tomography guided catheter.

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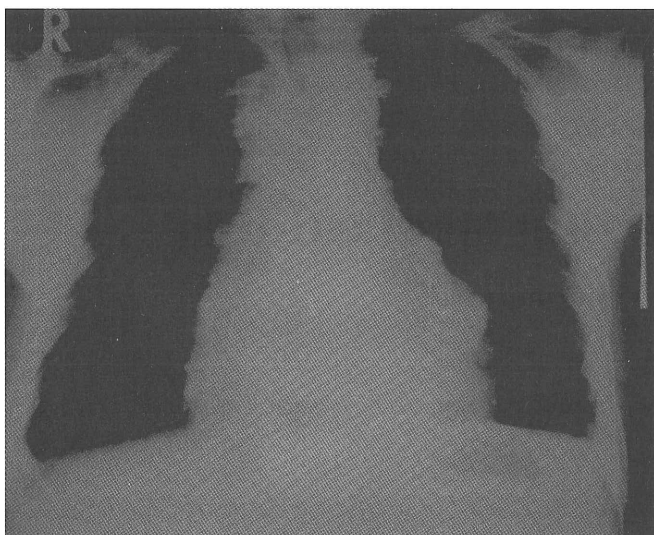


Fig. 1. Chest x-ray film on admission: cardiomegaly, left pleural effusion and widened mediastinum.

Case Report

A 40-year-old man was sent to our hospital because of abnormality on his chest x-ray. Before admission to our hospital, he had been admitted to another hospital with a history of sore throat and high fever for 5 days. In that hospital the patient had been diagnosed as Ludwig's angina and a drainage procedure had been performed via left submandibular incision and antibiotic therapy including ceftriaxone and gentamicin had been instituted for 14 days. There was no culture results of the submandibular incision material.

On admission to our hospital, there was no complaint except a swelling at the left side in the neck. The temperature was 36.5°C and there was a swelling at the left submandibular region. On oral examination, left second lower molar tooth, left first upper molar tooth and left upper canine tooth were observed as carious. These carious teeth were accepted as origin of the infection and extracted. The erythrocyte sedimentation rate was 30 mm/h and, white blood cell count was 18.000/mm³. Initial chest x-ray revealed cardiomegaly, left pleural effusion and widened mediastinum (Fig. 1). Pericardial effusion was demonstrated by echocardiography. There were multiple paramediastinal cystic masses containing fluid density, widened mediastinum and the left pleural effusion on the thorax computed tomography (Fig. 2).

Based on these findings we diagnosed descending necrotizing mediastinitis caused by Ludwig's angina. We immediately instituted a combined antibiotic therapy including cefuroxime 750 mg intravenously every 8

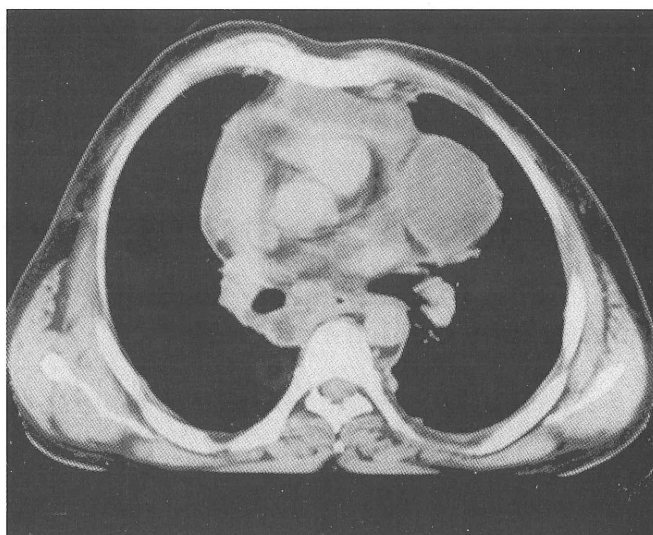


Fig. 2. Thorax computed tomography at time of admission: multiple paramediastinal cystic masses and widened mediastinum.

hours, ornidazole 500 mg intravenously every 12 hours, netilmicin 150 mg intravenously every 12 hours. A computed tomography guided catheter was introduced into the mediastinal cysts at the second intercostal space anteriorly (Fig. 3) and 60 cc pus was aspirated via catheter. A different catheter was placed at the left pleural cavity posteriorly and 20 cc pus was aspirated. The aerob cultures of both of the pura revealed no microorganism but, anaerob cultures of the pura could not be performed. The mediastinal and pleural catheters were connected to bottles for underwater

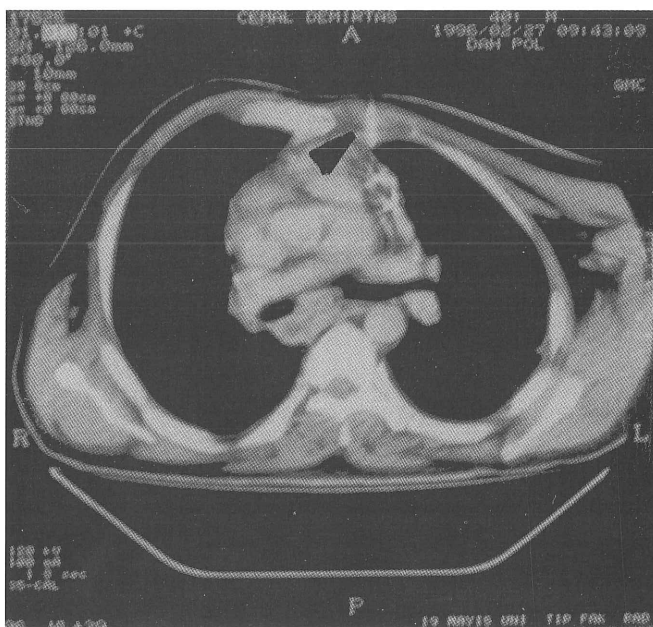


Fig. 3. Thorax computed tomography section showing the catheter (arrow) placed into the mediastinal cysts.

drainage. Continuous mediastinal irrigation was initiated with a saline solution. A month later, as there was no drainage from the mediastinal and pleural catheters, both of them were removed. On the 30th day, erythrocyte sedimentation rate was 20mm/h and white blood cell count was 8.000/mm³. Blunting of the left costophrenic sinus in the chest x-ray (Fig. 4) and mul-

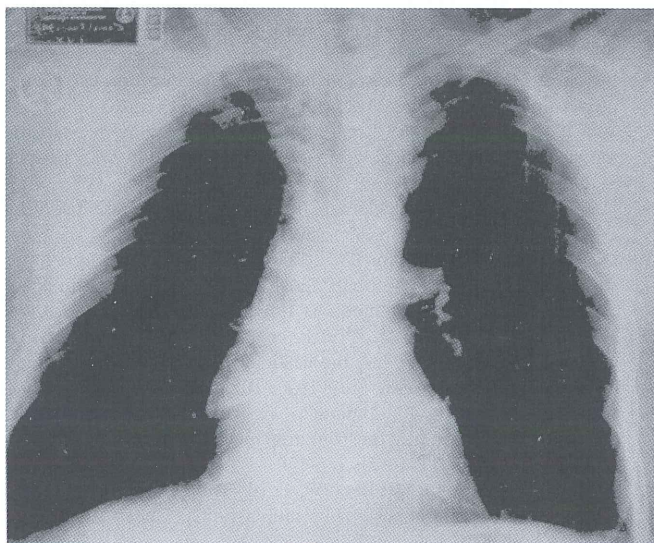


Fig. 4. Chest x-ray film obtained after catheters were removed: blunting of the left costophrenic sinus.

tipl mediastinal cysts lesser than 1cm and the left pleural thickening were observed on thorax computed tomography obtained after the catheters were removed (Fig. 5). Control echocardiography revealed no pericardial effusion. During the therapy, the temperature measurements ranged from 36.4°C to 37°C. The general condition of the patient was good, therefore, he was

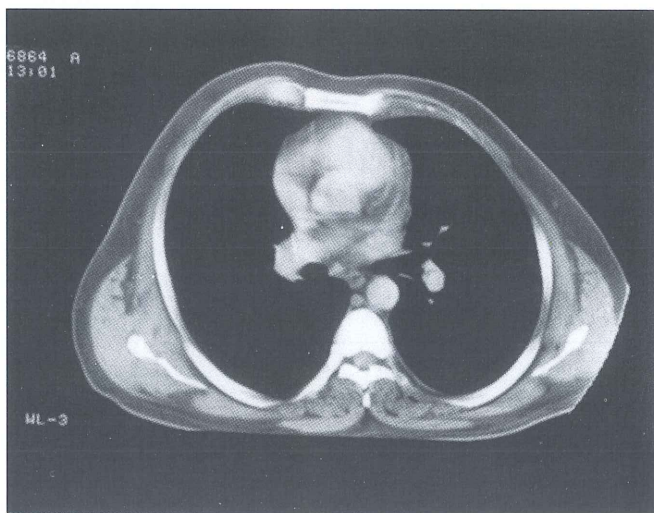


Fig. 5. Thorax computed tomography obtained after catheters were removed: multiple mediastinal cysts lesser than 1cm and left pleural thickening.

discharged from the hospital on the 40th day. One year later, the patient had not any complaint and his thorax computed tomography was normal (Fig. 6).

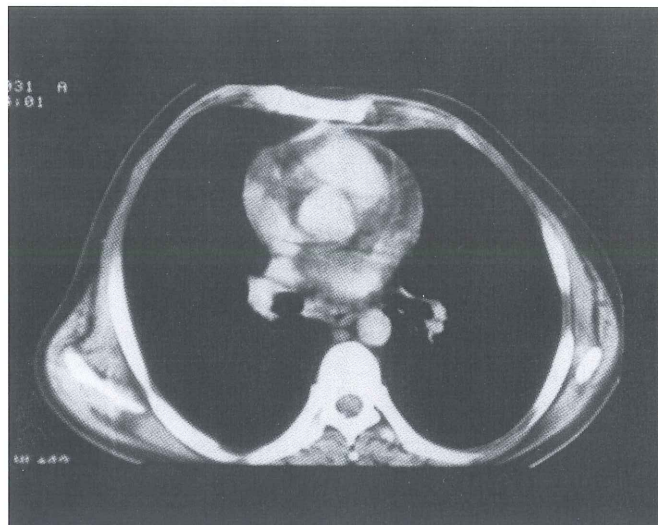


Fig. 6. Normal thorax computed tomography obtained one year after admission

Discussion

Descending necrotizing mediastinitis (DNM) is uncommon, and may be lethal if not treated adequately and promptly. Adequate drainage and debridement, appropriate antibiotic therapy, and sufficient nutritional and respiratory support are the main treatment elements (2).

Mediastinal drainage remains an essential procedure in the treatment of the patient with DNM. However, there are a lot of speculations concerning the ideal form of surgical approach (2). Marty-Ane and coworkers (7) recommended systematic thoracotomy in all the patients with DNM regardless of the level of the involvement into the mediastinum. According to several investigators (2-5), superior mediastinal drainage through a cervical approach (cervicomedial drainage) is adequate when the mediastinitis limited to the upper mediastinum and transthoracic drainage (thoracotomy) has to be performed only when the mediastinitis has spread below the carina.

In the medical literature, there are some studies reporting the drainage of the mediastinum that has been achieved by mediastinoscopy, thoracoscopy, and computed tomography guided selective needle aspirations in DNM (6,8,9). De Marie (6) and coworkers successfully treated a patient with DNM using a nonsurgical approach with the computed tomography guided per-

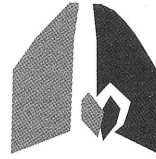
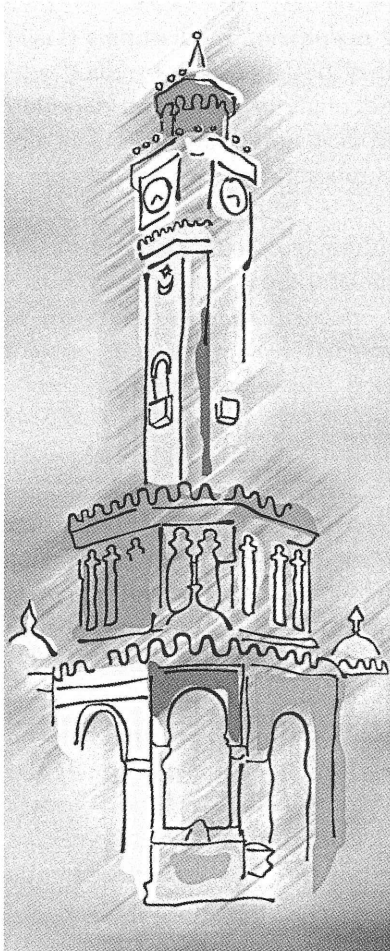
cutaneous cervical needle aspiration. In this patient, the upper mediastinitis was drained via computed tomography guided selective needle. We report a case of DNM that mediastinal abscesses were drained nonsurgically using a computed tomography guided catheter introduced into the mediastinal abscess cavity at the second intercostal space anteriorly and pleural pus was drained by another catheter placed at the left pleural cavity posteriorly. One year later, there was no abnormality on physical examination and thorax computed tomography. We couldn't find any previous study in the medical literature reporting the drainage of the mediastinal abscess achieved by computed tomography guided catheters. To our knowledge, this is the first case with DNM treated via computed tomography guided catheter.

In conclusion, drainage of the mediastinum is mandatory in DNM. To decide which method will be used for the mediastinal drainage, general condition of the patient and the level of the mediastinal infection must be evaluated cautiously. Since the general condition of our patient was well, we drained the mediastinal abscesses via computed tomography guided catheter.

This technique can be an alternative procedure to the thoracotomy in DNM if the patient's general condition is not too bad.

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