**Introduction**

Acute mediastinitis is a serious infection involving the connective mediastinal tissue in the interpleural spaces and other thoracic structures. The most lethal form of mediastinitis is the diffuse necrotizing type, which occurs as a complication of infections that may arise from odontogenic or cervicofacial infections and is called DNM. As infection spreads along deep cervical fascial planes into the mediastinum, widespread cellulites, necrosis, abscess formation, and sepsis may occur. Delay of diagnosis and inappropriate drainage of the mediastinum are the main causes for the high mortality. Surgical management, and particularly the best way of mediastinal drainage, remains controversial ranging from cervical drainage alone, to cervical mediastinotomy and pleural and mediastinal irrigation with saline. Although the diagnosis was delayed, invasive surgical interventions allowed successful eradication of the infection.

**Case Report**

A 45-year-old woman was referred to our hospital with the diagnosis of lung abscess and complaint of severe dyspnea in a state of emergency. Life-threatening complications including tachycardia (170/min), hypotension (70/40 mmHg), and high fever (38.8°C) revealed a septic shock. After meticulous examination, DNM was suspected with crepitations and cellulites in the neck. Chest X-ray revealed bilateral pulmonary infiltrations and abscesses on the right. The diagnosis of DNM was confirmed by computed tomography [CT]. CT of the neck and thorax showed multiple abscesses in the fascial planes, anterior mediastinum and bilateral infiltration in lung parenchyma (Fig. 1). The patient’s history was suggestive: extraction of a molar tooth 10 days prior to hospitalization. However, there were no risk factors for a wide spread infection except a tooth abscess which was treated inappropriately. Initially, cervical mediastinotomy was performed. The abscesses in the neck and anterior mediastinum were drained and a tracheotomy was established. Two Penrose drains were inserted to the cervical spaces and a chest drain to the anterior mediastinum (subxyphoidal). The symptoms of tachycardia and hypotension improved dramatically. As a second step, a right posterolateral thoracotomy was performed for draining the abscesses and removing the necrotic tissues, and also for decortication. Two thoracal drains were inserted into the right hemithorax. Mediastinal and pleural purulent fluid culture was positive for multiple organisms as Candida albicans, Staphylococcus aureus, Actinomyces israelii. As a third step, mediastinal and pleural irrigation via the chest tubes were performed twice a day until a culture of pleural effusion became negative. Bronchoalveolar lavages via a bronchoscopy were performed to aspirate mucopurulent secretions when necessary. Chest tubes were removed consequently. The mediastinal tube was the last one to be removed on the 25th postoperative day. On the 15th day after the operation, ventilation support was no more necessary, but 3-5 L/min mask O₂ was given. The tracheostomy canula could be removed on 25th day. The patient stayed in ICU for 35 days. She was discharged 40 days after the operation in a healthy condition.
Early use of CT as first imaging procedure in patients with suspected DNM can provide accurate information about the presence and extent of the septic process and it is a valuable guide to plan an optimal management and the most efficient surgical drainage. In addition, surveillance CT is recommended to ensure the adequacy of drainage and to identify unsuspected progression of DNM (3). Our patient was referred to CT scan before the operation to confirm the diagnosis, to learn about extends of infection and also to plan the surgical approach. Papalia and colleagues surveyed their 13 patients with CT scan of the neck and thorax during the peroperative period, especially when the clinical condition after surgical drainage did not improve or remained unchanged (4). This radiological surveillance allowed them to identify incomplete treatment or progression of the septic spread in the mediastinum and prompted urgent re-operation in patients with DNM. We used control CT to ensure the adequacy of the operations only once at the early postoperative period and no new operation was required.

Nakamori et al. stated that percutaneous catheter drainage strategy is less invasive than surgical drainage and controls the infection effectively (5). However, More et al. have suggested that cervical drainage alone is only sufficient for cases of cervical phlegmon or mediastinal involvement limited to a single superior mediastinal space and that thoracotomy and drainage of mediastinal collections is necessary when mediastinal sepsis is more extensive (6). Mediastinotomy and thoracotomy are essential for sufficient drainage in severe cases. As a less invasive method for patients with limited DNM, video-assisted thoracic surgery may be feasible and effective (7). In this case, the wide spread infection, including neck, mediastinum and pleural spaces necessitated an invasive surgical approach. The mediastinum cannot be adequately drained by a limited approach through subxyphoid or anterior mediastinotomy and Corsten et al. suggest the use of early thoracotomy for the best control of mediastinal sepsis (8). We performed a right thoracotomy afterwards the cervical mediastinotomy for controlling the wide spread infection as soon as possible. Makeieff et al. conclude that prompt surgical drainage with management in an intensive care unit significantly reduced the mortality rate to less than 20% (9). After surgical drainage, our patient’s treatment was carried on in an intensive care unit until the complete recovery had been achieved.

Conclusion

Our observation suggests that the diagnosis of DNM can be suspected by physical examination and clinical history. Cervical and thorax CT are very important and necessary to confirm the diagnosis and to plan the opti-
nal management and efficient surgical drainage. Surgical treatment must be performed as soon as possible especially in delayed cases. We recommend sufficient drainage, mediastinal and pleural irrigation, and postoperative intensive care in the treatment of DNM.

References


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