

AB012. Descending mediastinitis

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Background: Descending necrotising mediastinitis (DNM) is a life-threatening condition. Without timely diagnosis, immediate administration of appropriate antibiotics and prompt aggressive surgical management, a fatal outcome is likely. The mortality rate is high, with reports ranging from 11% to 40%. It generally results from odontogenic, peritonsillar or other pharyngeal infections of polymicrobial origin (most commonly *Streptococcus* and *Bacteroides* species), entering through disruptions of mucosal and tissue barriers and spreading rapidly along the deep fascial planes into the mediastinum. Comorbidities, especially of immunosuppressive character, (i.e., diabetes, alcoholism, malnutrition, corticosteroid therapy and prior chemotherapy), might not only predispose to development of DNM but also lead to more complicated courses of the disease. It may also result from iatrogenic oropharyngeal perforation, cervical trauma, cervical lymphadenitis, suppurative thyroiditis, traumatic endotracheal intubation, epiglottitis, parotitis, sinusitis, sternoclavicular joint infection and jugular intravenous drug use/abuse. As the infection spreads along the mediastinal planes, phlegmon, necrosis, abscess formation and sepsis may rapidly develop. A delay in diagnosis and delayed or incomplete drainage of the mediastinum are the main causes for the high mortality rate of this life-threatening condition.

Methods: The criteria for diagnosis of DNM established by Estrera *et al.* include: (I) clinical manifestations of severe infection; (II) demonstration of characteristic roentgenographic features; (III) documentation of the necrotizing mediastinal infection at operation or post-mortem examination, or both; (IV) establishment of the relationship of oropharyngeal or cervical infection, with the development of the necrotizing mediastinal process. Contrast-enhanced cervicothoracic CT-scan has led to improved outcomes by facilitating diagnosis and directing

operative therapy. The various extents of mediastinitis on CT are well classified according to Endo *et al.* and affect the mortality rate (around 10% and 30% respectively above and below the tracheal carina). The different types of mediastinitis may progress into advanced stages within a few hours. The different anatomical neck spaces from which infection spreads to the mediastinum are the pretracheal and the retropharyngeal space, respectively. The pretracheal space ends inferiorly at the pericardium and parietal pleura at carinal height.

Results: Administration of IV broad spectrum antibiotics with coverage for aerobic and anaerobic bacteria as soon as possible is mandatory. In case of severe sepsis and/or septic shock, early ICU admission for optimal management is strongly advisable. After treatment of the pharyngeal or dental focus and airway management, prompt and adequate drainage of the neck and the mediastinum should be performed. There appears to be a consensus that an aggressive cervical approach (cervicotomy) should be undertaken, either through a transverse collar incision or by unilateral, or bilateral longitudinal incisions along the anterior border of the sternocleidomastoid muscle. Airway compromise due to inflammatory oedema is a common finding in DNM that should be anticipated and treated with early tracheotomy, which can serve a dual role of opening fascial planes and securing the airway. For the mediastinal component, some authors favour a selective approach with an attempt to drain upper anterior mediastinal collections through a cervicotomy, adding transthoracic approaches only when the mediastinal infection descends below the carina (the T4 vertebra). The surgical strategy is usually determined according to the expected extent of disease on CT-scan: for localized infection of the upper mediastinum (above the tracheal carina) cervicotomy and transcervical drainage may be sufficient; if anterior mediastinum is involved an additional subxiphoid drainage (in localized disease and stable patients only) or a median sternotomy can be performed, whereas a clamshell approach, uni-/bilateral thoracotomy and or uni-/bilateral VATS allows good exposure of the whole mediastinum and both pleural cavities with the possibility of early uni-/bilateral decortication and debridement of the entire mediastinum. As a general principle on which most authors agree optimal treatment should include radical surgical debridement of affected tissue (i.e., pericardial fat and thymic tissue). Possible reported adverse events after median sternotomy

or clamshell incision include phrenic nerve palsy, sternal dehiscence or even sternal osteomyelitis.

Conclusions: Each of the abovementioned techniques offers potential advantages and disadvantages, and presumably, the surgical approach has to be carefully chosen according to the patients' condition, the extent of disease and the surgeons' experience in order to maintain a low rate of complications, reoperations and mortality.

Keywords: Descending mediastinitis; sepsis; thoracic surgery

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