

A Descriptive Analysis of a Series of Patients Diagnosed With Acute Mediastinitis

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Acute mediastinitis is one of the most aggressive chest diseases. The mortality rate ranges between 14% and 42%. We present a retrospective analysis of a series of 26 cases (20 men and 6 women) treated between January 1994 and March 2002 and review the literature. Mediastinitis originated in the esophagus in 17 patients (8 postoperative, 4 due to iatrogenic perforation, 4 due to noniatrogenic perforation, and 1 due to a foreign body) and in the oropharynx in 6 patients; mediastinitis was secondary to median sternotomy in 3. Twenty-five patients were treated surgically. In addition to radical debridement and drainage, which were carried out on all the patients, 10 also underwent esophagectomy or resection of the esophago-gastric reconstruction, 5 received primary sutures of the esophagus, 1 received reconstructive surgery with a pectoral muscle flap, and 1 underwent sternectomy plus intrathoracic omental transposition. Four patients died within 30 days of surgery (15.4%). The mortality rate in our practice is similar to that described in the literature. The results argue for early, aggressive treatment.

Key words: *Acute mediastinitis. Surgery. Complications. Morbidity. Mortality.*

Análisis descriptivo de una serie de casos diagnosticados de mediastinitis aguda

La mediastinitis aguda es una de las enfermedades torácicas más agresivas. La mortalidad varía entre el 14 y el 42%. Nuestro objetivo es presentar un análisis retrospectivo de una serie de 26 casos (20 varones y 6 mujeres) tratados entre enero de 1994 y marzo de 2002 y una revisión de la bibliografía. La mediastinitis fue de origen esofágico en 17 pacientes (8 posquirúrgicas, 4 por rotura iatrogénica, 4 por rotura no iatrogénica y una por cuerpo extraño), de origen bucofaringeo en 6 pacientes y secundarias a esternotomía media en 3. Se trató quirúrgicamente a 25 pacientes; además del desbridamiento radical y los drenajes, que se hicieron en todos los pacientes, en 10 se practicó una esofagectomía o resección de plastia gástrica; en 5, suturas primarias de esófago; en uno, plastia de pectoral mayor, y en otro, esternectomía más omentoplastia. Cuatro pacientes fallecieron en los 30 días después de la intervención (15,4%). La mortalidad en nuestro entorno es similar a la descrita en la bibliografía. Los resultados justifican el tratamiento agresivo y temprano.

Palabras clave: *Mediastinitis aguda. Cirugía. Complicaciones. Morbimortalidad.*

Introduction

Mediastinitis is an acute or chronic inflammatory process of the connective tissues of the mediastinum. The acute process is generally due to gram-positive cocci infections which produce purulent secretions that collect in the mediastinum. Acute mediastinitis is a rare, aggressive disease with a high mortality rate. A clear, complete description of diagnostic criteria for mediastinitis is provided by Estrera et al¹, and in ARCHIVOS DE BRONCONEUMOLOGÍA, González-Aragoneses et al² reported 2 cases of descending necrotizing mediastinitis originating in the oropharynx, recommending posterolateral thoracotomy for all mediastinitis cases.

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The literature describes mortality rates ranging from 14% to 42%.¹⁻⁶ High mortality correlates with delayed diagnosis or treatment⁷ whereas early treatment seems to reduce mortality.⁸ The present study is a retrospective review of patients who were initially diagnosed and treated for acute mediastinitis in the department of thoracic surgery of the Hospital Universitario de Salamanca, Spain, from January 1994 to March 2002.

Clinical Observation

During the study period we treated 26 cases (20 men and 6 women) for acute mediastinitis. The mean age of the patients was 55 years (range 26–85 years). In 17 cases (64%) mediastinitis originated in the esophagus: 8 (30%) occurred after resection of esophageal carcinoma and 9 (34%) were secondary to esophageal perforation. Four of the perforations were due to spontaneous rupture (Boerhaave syndrome), 4 were iatrogenic, and 1 was caused by ingestion of a foreign body (a lamb bone). In 6

TABLE 1
Postoperative Complications

	Number of cases
Bilateral pneumonia	2 (died)
Acute respiratory distress syndrome	1 (died)
Hemorrhage	1 (died)
Acute pulmonary edema	1
Acute kidney failure	1
Wound infection	1
Gastroduodenal ulcer	1

TABLE 2
Review and Comparison of the Literature

Authors	Year	Number of cases	Mortality rate
Estrera et al ¹	1983	10	42.0%
Cherveniakov and Cherveniakov ³	1992	147	14.4%
Melero-Sancho et al ⁴	1999	7	14.0%
Marty-Ané et al ⁵	1999	12	16.5%
Papalia et al ⁶	2001	13	23.0%
Weighted mean	1983-2001	189	16.6%
Hospital Universitario de Salamanca	1996-2002	26	15.4%

cases (23%), the cause was oropharyngeal infection due to dental or peritonsillar abscess (Figure), and 3 cases (12%) were secondary to median sternotomy wound infection. Mediastinitis was associated with pleural empyema in 20 cases (76.9%) and with peritonitis in 1 case (3.5%). All diagnoses were confirmed by computed axial tomography. In the cases with infection originating in the esophagus, contrast-enhanced images were obtained to locate the perforation site. Diagnosis was reached within 12 hours in 15 cases (56.7%) and within 24 hours in 8 (30.8%). Diagnosis and, therefore, treatment were delayed for the remaining three patients (12.5%). All the patients underwent thoracotomy except one who was treated by means of chest tube drainage. In addition to mediastinal debridement and drainage, 10 patients underwent esophagectomies or resection of the esophago-gastric reconstruction (deferring a new reconstruction), 5 received primary sutures of the esophagus covered with an intercostal muscle or pericardial fat flap, 1 was reconstructed with a greater pectoral muscle flap, and 1 underwent sternectomy plus intrathoracic omental transposition. The patients required a mean 3.33 (range 2–5) surgical procedures in separate operations not counting deferred reconstructions. Four patients (15.4%) died: 2 in relation to esophageal disease and 2 with descending necrotizing mediastinitis. Postoperative complications are summarized in Table 1.

Discussion

Most authors have described an increase in the incidence of acute mediastinitis in recent years.⁹⁻¹³ Such an increase, if real, might be the result of a rising number



Figure. Mediastinitis due to oropharyngeal infection. Cervical subcutaneous emphysema and purulent secretions in the right paratracheal region.

of procedures on the esophagus or a greater interest on the part of authors in the diagnosis and treatment of the problem. Some have reported a relation between early diagnosis and treatment and lower mortality^{10,13} and have also indicated that certain nonspecific problems, such as an initial diagnosis of pneumothorax, pneumoperitonea, sepsis, or shock, could cause delay in reaching a full diagnosis and treatment.¹⁰ Diagnosing acute mediastinitis through conventional x-rays alone may delay treatment, and if mediastinitis is suspected based on clinical signs, computed axial tomography should be performed. Once diagnosis is confirmed, aggressive treatment is recommended.¹⁴ Aggressive treatment is defined as complete mediastinal debridement with excision of necrotic tissue, and, if necessary, insertion of multiple mediastinal, pleural, and cervical drains. Posterolateral thoracotomy is the approach of choice^{15,16} because it allows good exposure of the mediastinal compartments. Median sternotomy is inappropriate as it exposes the patient to the additional risk of sternal osteomyelitis. Sternectomy plus omental muscle flap surgery should be reserved for cases of severe sternal osteomyelitis.¹⁷ When mediastinitis originates in the oropharynx, trans-cervical drainage is insufficient. Drainage guided by computed tomography may be useful, but only in initial stages and in some cases of post-sternotomy mediastinitis, according to El Oakley and Wright¹⁹ and Berg et al.²⁰ For patients with spontaneous rupture or iatrogenic perforation of the esophagus, the esophagus may be sutured directly if diagnosis is early and no serious underlying esophageal disease is present.³ In the remaining cases with infection originating in the esophagus, esophagectomy with gastrostomy and jejunostomy are indicated. In cases of mediastinitis secondary to gastroplasty or coloplasty, the reconstruction should be removed in order to proceed with a second reconstruction at a later time. The literature describes an overall mortality rate ranging from 14% to

42%, from which we have calculated a weighted mean of 16.6%, which is similar to the mortality rate of 15.4% in our series (Table 2). In conclusion, we strongly advise a high degree of suspicion, early diagnosis, and initiation of aggressive treatment.

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