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

P. Macrí, M.F. Jiménez, N. Novoa, and G. Varela

Sección de Cirugía Torácica, Hospital Universitario de Salamanca, Salamanca, Spain.

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.


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 al, and in ARCHIVOS DE BRONCONEUMOLOGÍA, González-Aragoneses et al reported 2 cases of descending necrotizing mediastinitis originating in the oropharynx, recommending posterolateral thoracotomy for all mediastinitis cases.

The literature describes mortality rates ranging from 14% to 42%. High mortality correlates with delayed diagnosis or treatment whereas early treatment seems to reduce mortality. 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
MACRÍ P. ET AL. A DESCRIPTIVE ANALYSIS OF A SERIES OF PATIENTS DIAGNOSED WITH ACUTE MEDIASTINITIS

TABLE 1
Postoperative Complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral pneumonia</td>
<td>2 (died)</td>
</tr>
<tr>
<td>Acute respiratory distress syndrome</td>
<td>1 (died)</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>1 (died)</td>
</tr>
<tr>
<td>Acute pulmonary edema</td>
<td>1</td>
</tr>
<tr>
<td>Acute kidney failure</td>
<td>1</td>
</tr>
<tr>
<td>Wound infection</td>
<td>1</td>
</tr>
<tr>
<td>Gastrroduodenal ulcer</td>
<td>1</td>
</tr>
</tbody>
</table>

TABLE 2
Review and Comparison of the Literature

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Number of cases</th>
<th>Mortality rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estrera et al1</td>
<td>1983</td>
<td>10</td>
<td>42.0%</td>
</tr>
<tr>
<td>Cherveniakov and Cherveniakov3</td>
<td>1992</td>
<td>147</td>
<td>14.4%</td>
</tr>
<tr>
<td>Melero-Sanco et al4</td>
<td>1999</td>
<td>7</td>
<td>14.0%</td>
</tr>
<tr>
<td>Marty-Andé et al5</td>
<td>1999</td>
<td>12</td>
<td>16.5%</td>
</tr>
<tr>
<td>Papalia et al8</td>
<td>2001</td>
<td>13</td>
<td>23.0%</td>
</tr>
<tr>
<td>Weighted mean</td>
<td>1983-2001</td>
<td>189</td>
<td>16.6%</td>
</tr>
<tr>
<td>Hospital Universitario de Salamanca</td>
<td>1996-2002</td>
<td>26</td>
<td>15.4%</td>
</tr>
</tbody>
</table>

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 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.10,12 and have also indicated that certain nonspecific problems, such as an initial diagnosis of pneumothorax, pneumoperitoneum, 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 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 Wright18 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.

REFERENCES