



Original Article

Accelerated Treatment of Concomitant Empyema and Lung Cancer by Video-assisted Thoracoscopic Surgery[☆]



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Background: The most common cause of pleural empyema are parapneumonic effusions, and lung cancer is a rare cause of empyema. The aim of the present study is to analyse the results of the thoracoscopic treatment of empyema before definitive oncological treatment. **Methods:** Retrospective descriptive study of 332 patients including different clinical variables between 2002 and 2010.

Results: Among 332 patients with empyema, the etiology of this disease was lung cancer in 11 patients. Ten of these patients were male and one was female (median age, 57.9 years; range, 46–76). The initial treatment was tube thoracostomy in 8 patients and video-assisted thoracoscopic surgery in 3 patients. Thoracoscopic debridement was performed in 4 patients whose tube thoracostomy underperformed because of insufficient drainage. The methods used for diagnosis of lung cancer were fiberoptic bronchoscopy and video-assisted thoracoscopic surgery. Surgical resection was performed on 7 suitable patients following infection control. Postoperative bronchopleural fistula and empyema occurred after pneumonectomy in one case. No operative mortality was observed. The mean survival time was 32.8 months for patients undergoing resection.

Conclusions: Empyema could be a rare presentation of lung cancer and those suitable for surgical treatment should undergo standard treatment with reasonable results.

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Tratamiento acelerado del empiema y cáncer de pulmón concomitantes mediante cirugía toracoscópica videoasistida

RESUMEN

Palabras clave:

Infección
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Introducción: La causa más frecuente de los empiemas pleurales son los derrames paraneumónicos, siendo el cáncer de pulmón el origen de los mismos en muy pocas ocasiones. El objetivo de nuestro trabajo es analizar los resultados del tratamiento del empiema por vía toracoscópica previo al tratamiento oncológico definitivo.

Métodos: Estudio descriptivo retrospectivo en el que se recogen las diferentes variables clínicas durante el tratamiento de 332 pacientes entre 2002 y 2010.

Resultados: En 332 pacientes con empiema, la etiología de esta enfermedad fue el cáncer de pulmón en 11 casos. Entre ellos había 10 varones y una mujer (mediana de edad, 57,9 años; rango: 46-76). El tratamiento inicial fue la colocación de un tubo de toracostomía en 8 pacientes y la cirugía toracoscópica videoasistida en 3 pacientes. Se llevó a cabo un desbridamiento toracoscópico en 4 pacientes en los que el resultado del tubo de toracostomía no fue satisfactorio debido a un drenaje insuficiente. Se llevó a cabo una resección quirúrgica en 7 pacientes cuyas características eran apropiadas tras el control de la infección. Se produjo una fístula broncopleural y un empiema postoperatorio tras la neumectomía en un caso. No se observó mortalidad operatoria. La media de supervivencia fue de 32,8 meses en los pacientes tratados con resección.

Conclusiones: El empiema puede ser una forma de presentación muy poco frecuente del cáncer de pulmón cuyo abordaje puede realizarse por toracoscopía, si bien el mismo tiene sus limitaciones.

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Introduction

Empyema is defined as a collection of pus in the pleural cavity. Empyema remains a potentially serious condition with multiple causes. Although it most commonly occurs after parapneumonic effusion, it also occurs as a complication of lung cancer in 0.1%–7.9% of cases of empyema and in 0.7% of patients with operable primary lung cancer.^{1,2}

Empyema can be controlled by drainage of the thoracic cavity and systemic treatment with antibiotics. Drainage is achieved with tube thoracostomy or video-assisted thoracoscopic surgery (VATS). If lung cancer is the cause of the empyema, it should be staged, and if the cancer stage is suitable, lung resection can be performed.

As only a limited number of cases are reported in the literature, we sought to evaluate the treatment of empyema in primary lung cancer with resectable tumors.

Materials – Methods

Using our hospital's database, we retrospectively investigated 332 patients who were diagnosed with empyema between 2002 and 2010. All of the patients who were treated in our clinic provided informed consent by signing a statement allowing the use of their data for clinical trials. Patients were classified according to etiology, which was determined based on the patient's history; findings of physical examination, radiology, and empyema fluid analysis; and other clinically relevant factors. Postoperative, post-traumatic, post-pneumonic

empyema, and metastatic lung cancer patients were not included in this study. Our study included patients with a diagnosis of primary lung cancer during the treatment of empyema. Data collected included demographics, subtype of pulmonary tumor, diagnosis, staging, surgical procedures, outcomes, and follow up.

Complete blood counts, biochemical parameters, and sputum tests for tuberculosis and non-tuberculosis were evaluated in all patients. Imaging studies (e.g., posteroanterior and lateral chest radiography, ultrasonography, thoracic computerized tomography (CT), and positron emission tomography) were also performed. Thoracic CT was used to determine parenchymal lesions of lung.

Thoracentesis was performed in all cases. Pleural fluid was sent for biochemical, microbiological, and pathological examination. Empyema was defined as culture-positive pleural fluid, purulent appearance, smell, and biochemical parameters. All patients with a suspected pleural infection received appropriate antibiotic treatment from the time of first review.

Tube thoracostomy and/or VATS were performed first, based on the physical status of the patient, for drainage of empyema. If drainage was insufficient following tube thoracostomy in a patient, VATS was also performed as a secondary procedure.

Single lung ventilation was achieved using a double lumen endotracheal tube at the time of VATS. Fibrin deposits were cleaned from the parenchyma of the lung, ribs, and diaphragm, and the thoracic space was washed with saline during the operation. After lung was freed from the chest wall and diaphragm, lung capacity was checked by inflating the lung to fill the pleural cavity. We obtained biopsies from the parietal

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