



## ORIGINAL ARTICLE

# Complicated pleural infection: Analysis of two consecutive cohorts managed with a different policy<sup>☆,☆☆</sup>



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### KEYWORDS

Pleural infection;  
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Chest tube;  
Pleural drainage;  
Antibiotics

### Abstract

**Introduction:** The treatment of complicated pleural infection (CPI) is controversial. Clinical guidelines recommend drainage, but with the lowest grade of evidence. Recent reports have observed good outcomes with antibiotics alone. We retrospectively compared the outcomes in two consecutive cohorts treated with different policies: the first treated according to pleural fluid characteristics (2005–2009, interventional-prone, group 1) and the second according to clinical assessment (2010–2013, conservative-prone, group 2).

**Methods:** The clinical records of all children treated for CPI in our hospital between 2005 and 2013 were thoroughly reviewed. Primary outcomes were the proportion of children drained and the length of hospital stay (LHS).

**Results:** One hundred and nine patients (64 group 1 and 45 group 2) were analyzed. A chest tube was placed in 83% of patients in group 1 and 47% in group 2 ( $P < 0.001$ ). The mean LHS was 11.4 days for patients in group 1 and 12.3 for patients in group 2 ( $P = 0.45$ ); no differences were observed in other outcomes.

**Conclusion:** Our results add to few recent observations reporting good outcomes in many children treated with antibiotics alone and challenge the need to drain most children with CPI. Clinical trials are now needed to identify when a drainage procedure would be useful.

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**PALABRAS CLAVE**

Infección pleural;  
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Drenaje pleural;  
Antibióticos

**Derrame paraneumónico complicado: análisis de dos cohortes consecutivas tratadas con distinto criterio****Resumen**

**Introducción:** El tratamiento del derrame pleural paraneumónico complicado (DPC) es controvertido. Las principales guías recomiendan el drenaje, pero con el menor nivel de evidencia. En trabajos recientes se han observado buenos resultados solo con antibióticos. Hemos comparado retrospectivamente nuestros resultados en dos cohortes consecutivas de pacientes tratados con distinto criterio: en el grupo 1 (2005–2009, actitud intervencionista) el drenaje se decidía en función de las características del líquido pleural, de acuerdo con las principales guías; en el grupo 2 (2010–2013, actitud conservadora) el drenaje se decidía en función de la evolución clínica del paciente.

**Métodos:** Se revisaron las historias clínicas de los pacientes tratados por DPC entre 2005 y 2013. Las principales variables analizadas fueron la proporción de pacientes drenados y la duración de la estancia hospitalaria.

**Resultados:** Se analizaron 109 pacientes (64 grupo 1 y 45 grupo 2). Se colocó un tubo de drenaje en el 83% de los pacientes del grupo 1 y en el 47% de los del grupo 2 ( $P < 0,001$ ). La duración media de la estancia hospitalaria fue de 11,4 días en el grupo 1 y 12,3 días en el grupo 2 ( $P = 0,45$ ). No se observaron otras diferencias destacables.

**Conclusión:** Nuestros resultados coinciden con los de otros estudios recientes que han observado una buena evolución en niños tratados solo con antibióticos y cuestionan la necesidad del drenaje en muchos de los niños que padecen un DPC. Son necesarios ensayos clínicos para identificar las circunstancias en las que se puede obtener un beneficio del drenaje en el DPC.

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**Introduction**

Pleural effusion and empyema are occasional complications of pneumonia in children that have been reported to have increased in recent years.<sup>1–4</sup> Small effusions do not require invasive procedures for diagnosis and treatment, and do well with antibiotics alone. The treatment of large, organized and purulent effusions (fibrinopurulent stage) remains controversial and different approaches have been reported, from conservative antibiotic treatment to chest tube insertion or other surgical procedures, mainly video-assisted thoracoscopic surgery. Most guidelines consider that complicated pleural infection (CPI) should not be managed with antibiotics alone and recommend drainage,<sup>5–8</sup> but some institutions have observed good outcomes without requiring a chest tube or surgery for many of the affected children, suggesting a benefit from a more individual approach.<sup>9,10</sup>

Our institution is the reference center for a population of almost 250,000 children under 15 years old when they require intensive care or pediatric surgery. Many children diagnosed with CPI are transferred from other hospitals for evaluation and treatment. In 2010, as a result of our experience and a recent report,<sup>9</sup> we moved from our previous adherence to authorized guidelines, resulting in draining most cases of CPI, to a more conservative and individualized management. We report our experience in the last 9 years, and compare patient characteristics, treatments and outcomes of children attending our hospital from 2005 to 2009, when a chest tube was usually inserted,

depending on the characteristics of the effusion, with those who attended from 2010 to 2013, who were managed according to holistic clinical criteria, mainly the severity of appearance and respiratory difficulties based on physical examination.

**Patients and methods****Selection of patients**

Information on patients younger than 15 years old admitted between 2005 and 2013 inclusively, with a discharge diagnosis of pleural effusion or empyema, was retrieved from our hospital electronic database. The clinical records of these patients were retrospectively reviewed to select those with pleural effusion associated with a diagnosis of community-acquired pneumonia. Patients with an effusion associated with tuberculosis or other diseases were excluded. Paraneumonic effusions were considered to be CPI if the pleural space was bigger than 1 cm as measured in plain chest roentgenogram and loculations or debris were observed by pleural ultrasound. Only patients with CPI were selected for analysis.

**Hospital management**

Patients were admitted from the emergency department of our hospital or transferred from other hospitals. Two groups of patients are compared: those admitted between 2005

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