

Septations in pleural infection – what do they actually mean?

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INTRODUCTION

It is well established that when associated with infection, pleural effusions carry a significant morbidity and mortality. Sonographic septations are assumed to be associated with poor fluid drainage and some clinicians use this radiological parameter as an indication to bypass medical treatments and proceed directly to surgical drainage, but the evidence for this was unclear. We therefore undertook a literature review to assess the relationship between septations and pleural infection outcome.

METHODS

A systematic literature search was conducted using Medline (1946 to present), Embase (1974 to present), Cochrane database of systematic reviews, Cochrane Central Register of Controlled Trials, Scopus and Web of Science Core Collection. The search did not restrict on language and included all age groups. Septated effusions were captured using the following MeSH terms; [septations, septae, locules, loculations, septated pleural effusions, pleural infection, empyema and parapneumonic effusion]. The outcomes assessed included length of hospital stay, mortality, sepsis, surgery, VATS, decortication, intensive care, death and a number of patient centred outcomes.

RESULTS

The search resulted in a total of 267 publications. After de-duplication, two researchers independently reviewed the remaining 136 papers for inclusion criteria. Only six papers examined baseline sonographic appearances and related these to outcomes and these were further evaluated. Apart from one, these were all retrospective studies (see table). Only 2 similar papers from the same group (Chen et al) addressed our question directly and concluded that patients with a complex septated sonographic pattern have a poorer prognosis. Lai et al specifically addressed septations as a predictor of residual pleural thickening in tuberculous pleurisy. Whilst some papers suggested that the presence of loculations carries a prognostic value and possibly indicate need for early surgery (Cheng et al, Bongiolatti et al), others (Kearney et al) concluded that no sonographic findings reliably influence outcomes.

Author	Year	Type of study	n	Outcomes
Kearney	2000	retrospective	50	Surgery
Chen	2000	retrospective	163	LOS, surgery, mortality
Chen	2009	retrospective	141	LOS, surgery, ICU, mortality
Y F Lai	2009	prospective	87	RPT, loss of lung function
Chang	2016	retrospective	276	LOS, surgery
Bongiolatti	2017	retrospective	64	LOS, surgery

n= number of patients LOS = length of stay RPT = residual pleural thickening

CONCLUSIONS

This systematic review demonstrates that there is a paucity of evidence linking septations and outcome in pleural infection. Previous large pleural infection trials (MIST1 and MIST2) were conducted prior to the era of common ultrasound. The oft-held belief that a septated effusion requires upfront surgical treatment is not currently evidence based and therefore requires urgent further prospective studies.