SONOGRAPHIC 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 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 6 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 1). 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.

Conclusion 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 necessitates urgent further prospective studies.

ROLE OF MRI IN CHARACTERISING EQUIVOCAL PLEURAL THICKENING ON CT
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Introduction Pleural thickening (PT) not meeting the classic features of malignancy as described by Leung et al., poses a diagnostic conundrum. Patients often require biopsy or serial CT scanning to exclude a malignant process. MRI could be a problem-solving tool in this situation that may reduce invasive procedures. This pilot study aims to investigate the role of MRI in characterising those with equivocal features on CT as described below.

Methods Patients were prospectively recruited over 18 months from a single centre. Those who met one of the following criteria on CT were recruited to the ‘indeterminate group’; progressive PT but <10 mm in thickness, subtle PT extending over the mediastinum, PT <10 mm with minimal nodularity and CT suspicious for pleural malignancy but benign biopsies.

A control group comprised of patients with benign PT as confirmed on pleural biopsy or longitudinal follow-up, and patients with biopsy confirmed malignancy.

Patients had a DWI and a DCE MRI scan at the same sitting. Quantifiable measures such as apparent diffusion coefficient (ADC) from DWI and area under the curve (AUC) on DCE MRI were evaluated. Pleural pointillism (PP) which refers to detection of hyperintense areas on the pleura on b=1000 images, was also assessed.

Results 27 patients were recruited to the trial, while 25 patients underwent scans and were included in the final analysis (figure 1). Three patients in the indeterminate group were subsequently confirmed as malignant and 6 confirmed as benign PT.

Pleural pointillism was shown to be the most accurate method of differentiating benign from malignant PT with 100% sensitivity, 83% specificity, 75% PPV and 100% NPV.