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Title: Pentraxin-3: A novel biomarker for the differentiation of parapneumonic effusion and malignant pleural effusion

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Body: Pentraxin-3(PTX-3) is a new marker of inflammation. Pentraxins like C-reactive protein are key components of the innate immune system. Diagnostic value of PTX-3 in parapneumonic pleural effusion (PPPE) and malign pleural effusion(MPE) has not been examined before. The concentrations of pleural fluid PTX-3 were measured in a total of 61 patients: 20 with PPPE and 41 with MPE. A diagnosis PPPE was based upon the presence of an effusion in patients with clinical and radiological evidence of acute pneumonia. A malignant pleural effusion(PE) was defined by pleural biopsy or the presence of malignant cells on PE cytology. The area under the curve (AUC) quantified the overall diagnostic accuracy of the tests. The study demonstrated that PTX-3 concentration was higher in pleural fluid of PPPE patients compared with MPE patients (31.8 ng/mL vs 6.9 ng/mL, respectively, $p<0.001$). Pleural effusion PTX-3 demonstrated AUCs of 0.802 (95% CI: 0.683–0.921, $P<0.001$) for diagnosing effusions due to PPPE. The sensitivity and specificity of PE-PTX-3 for PPPE at the cut-off concentration of 8.5 ng/mL was 80% and 64 %, respectively. Measuring PTX-3 concentrations in pleural fluid may be helpful in distinguishing pleural effusion due to a PPPE or MPE aetiology.