

European Respiratory Society Annual Congress 2012

Abstract Number: 873

Publication Number: P2521

Abstract Group: 10.1. Respiratory Infections

Keyword 1: Pleura **Keyword 2:** Biomarkers **Keyword 3:** Sepsis

Title: Usefulness of procalcitonin as a diagnostic marker of pleural effusion

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Body: Pleural effusions are common and are associated with many diseases. We investigated the usefulness of procalcitonin (PCT) as a diagnostic marker for the cause of pleural effusion. The study was carried out on 54 patients with pleural effusion divided into groups; transudate (n=6), empyema (n=9), T.B (n=8), parapneumonic effusions (PPE) (n=9) and malignant effusions (n=22). Levels of procalcitonin were measured both in serum & pleural effusions. Pleural fluid procalcitonin was highest in empyema 1.17 ± 0.86 ng/ml, next highest in PPE (0.57 ± 0.56 ng/ml), & lowest in transudative effusions (0.06 ± 0.03 ng/ml). Pleural fluid & serum procalcitonin levels positively correlate in both empyema & PPE. The optimal discrimination of patients with empyema could be performed at a cut-off point of pleural fluid procalcitonin 0.09 ng/ml with area under the curve (AUC) of 0.93 (sensitivity 80%, specificity 95%) and at a serum procalcitonin 0.08 ng/ml with AUC of 0.74 (sensitivity 80%, specificity 60%). However, the optimal discrimination of PPE could be performed at a cut-off point of pleural fluid procalcitonin 0.065 ng/ml (sensitivity 78%, specificity 53%) and at a serum procalcitonin 0.054 ng/ml (sensitivity 89%, specificity 33%). The optimal discrimination of patients with (empyema & PPE) could be performed at a cut-off point of pleural fluid procalcitonin 0.075 ng/ml (sensitivity 83%, specificity 58%) and at a serum procalcitonin 0.07 ng/ml (sensitivity 83%, specificity 47%). In conclusion: Pleural fluid PCT is a good and early marker of infection in the pleural space and correlates with the serum PCT in patients with PPE or empyema. Pleural PCT had better diagnostic accuracy than the serum PCT in cases of PPE & empyema.