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Title: Human beta defensin-2 serum levels are lower in complicated infectious pleural effusions

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Body: Human BetaDefensin2 (BD2) is an innate defence antimicrobial peptide. This study analyzes the differences in serum and pleural BD2 levels among the three most common causes of pleural effusion. After approval of the Ethical Committee we obtained 42 infectious (13 complicated, 29 non-complicated), 32 malignant and 35 cardiac failure (CHF) pleural effusions. Infectious effusions were considered complicated if they required a chest tube, or non-complicated if no tube required. BD2 was measured by specific ELISA. Results are given as median (minimum-maximum), since data was non parametric (measured in pg/ml). Serum BD2 levels: infectious 250.6 (44.1-2100), malignant 225.1 (44.6-3000), CHF 287 (6-1877), Kruskal-Wallis test p= 0.92. Pleural fluid BD2 levels: infectious 309.6 (6-2300), malignant 244.3 (32.8-3000), CHF 187.1 (20-1753) Kruskal-Wallis p=0.149. Pleural fluid-to-serum BD2 ratio levels: infectious 0.85 (0.05-4.78), malignant 0.84 (0.18-8.43), CHF 0.75 (0.02-3.56) Kruskal-Wallis p= 0.275. when comparing complicated vs. non-complicated infectious effusions: Serum BD2 levels: complicated 110.1 (45.4-1459.6), non-complicated 430.8 (44.1-2100), Mann-Whitney test p= 0.02. Pleural fluid BD2 levels: complicated 200 (6-2300), non-complicated 428 (18.6-2100) Mann-Whitney p=0.145. Pleural fluid-to-serum BD2 ratio levels: complicated 1.08 (0.05-4.8), non-complicated 0.71 (0.22-3.88) Mann-Whitney p=0.362. Serum levels of BD2 are significantly lower in complicated pleural effusions compared to non-complicated infectious effusions, suggesting that insufficient BD2 production may initiate complicated pleural effusions.