Surfactant proteins and pneumonia

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Surfactant is composed of approximately 80% phospholipids, 8% other lipids and 12% protein of which about half are serum proteins. The most important surfactant component for lowering surface tension is dipalmitoylphosphatidyl-choline (DPPC). There are four surfactant-associated proteins – A, B, C and D. SP-B (8kDa) and SP-C (4kDa) are both small proteins and extremely hydrophobic – they are important in maintaining film stability and enhance absorption capacities of surfactant. SP-A (28-36kDa) and SP-D (43kDa) are water soluble and are collagenous calcium dependent lectins – *collectins.* Both enhance phagocytosis of bacteria, viruses and fungi and exert regulatory effects on type II pneumocytes. Both participate in the innate response to inhaled micro-organisms and have been shown to alter cytokine release in pneumonia.

Polymorphisms in the SP-A and SP-D genes may influence expression and or function of SP-A/SP-D mRNA and/or proteins and this may alter the development, disease progression and/or outcome from community acquired pneumonia (CAP) and ventilator associated pneumonia (VAP). We therefore determined the allele frequency of selected polymorphisms in SP-A and SP-D genes in critically ill patients. We studied the genotype of ICU patients and compared those with and without CAP and also those that developed VAP.

The study is ongoing. Ethics approval and written informed consent was obtained in all cases. To date DNA has been isolated from 31 ICU patients with either CAP or VAP and 16 ICU control patients. The selected polymorphisms have been determined by RFLP or DASH analysis and the allele frequency compared by Chi square. We also measured SP-D concentrations in the plasma of these patients.

Conclusions to date are:

- Plasma SP-D seems to be quite variable but not different between groups
- SPD-E5 and SPA1-E3 SNP may be important in the pathogenesis of pneumonia

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