**A640 - Kinetics of calprotectin, procalcitonin and c-reactive protein in healthy volunteers administered intravenous endotoxin**

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**Introduction:**
Early recognition of bacterial infection and sepsis is a key step for initiation of antibiotic treatment. Calprotectin is released by neutrophils upon their activation and may thus act as a biomarker of inflammation. This study sought to characterize the kinetics of calprotectin and compare them to established biomarkers following intravenous endotoxin challenge.

**Methods:**
Healthy male volunteers (n=10, mean age 26 years) were administered a bolus injection of 2ng/kg endotoxin (CCRE, E.coli O:113 EC-6). Blood was collected at baseline, 1, 1.5, 2, 4, 6, 8, 24, 48, 72hours and 7 days post injection. Plasma calprotectin was analyzed with a particle enhanced turbidimetric immunoassay (PETIA, Gentian Diagnostics). CRP was analyzed via The Doctors Laboratory, London. Procalcitonin was determined via ELISA (Abcam). Ethical approval was provided by UCL Research Ethics Committee (5060/001). Paired parametric analyses were performed and data displayed as mean +/- 95% CI.

**Results:**
Plasma calprotectin concentration began to increase 1.5hours after endotoxin administration, was significantly higher than baseline by 2hours (356.7ng/mL vs. 737ng/mL, p <0.01), peaked at 4hours (mean 1373ng/mL, Figure 1) and normalized by 24hrs. Calprotectin peaked earlier than comparator soluble mediators (procalcitonin 8hrs, CRP, 24hrs) and exhibited 100% sensitivity; all participants demonstrating a minimum 2-fold increase from baseline (mean 3.84x). Calprotectin displayed greater baseline variability (SD 147.9ng/mL) than either CRP or procalcitonin.

**Conclusion:**
Our results indicate the potential of plasma calprotectin as a biomarker for bacterial infection. It increases earlier and peaks more rapidly than standard biomarkers. Whilst higher baseline variability was observed, all participants exhibited a significant increase from baseline to peak concentration. Plasma calprotectin warrants further investigation as a tool to permit rapid diagnosis and treatment of infection.

**Image :**