ESOC Abstract (max 250 words)

Serum amyloid protein is associated with outcome following acute ischaemic stroke: data from the REmote ischaemic Conditioning After Stroke Trial (RECAST)

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Background:
Remote ischaemic per-conditioning (RIC) in experimental ischaemic stroke is neuroprotective. Several neurohumoral, vascular and inflammatory mediators are implicated.

Methods:
The REmote ischaemic Conditioning After Stroke Trial (RECAST) was a pilot blinded sham-controlled trial in patients with ischaemic stroke, randomised to receive four 5-minute cycles of RIC within 24 hours of ictus. Plasma taken pre-intervention, immediately post-intervention and on day 4 was analysed for nitric oxide (nitrate/nitrite) levels using chemiluminescence and other biomarkers were analysed by enzyme-linked immunosorbent assay (ELISA): alpha-2-macroglobulin (A2M), serum amyloid protein (SAP), e-selectin, vascular endothelial growth factor (VEGF). Biomarkers were correlated with outcome (Day 90 National Institutes of Health Stroke Scale [NIHSS], modified Rankin scale [mRS], Barthel index [BI]) using Pearson's correlation coefficient.

Results:
In all 26 patients, an increase in SAP (pre- to post-intervention) positively correlated with worse day 90 mRS ($r=0.429$, $p=0.029$) and negatively with worse BI ($r=-0.392$, $p=0.048$), whilst an increase in SAP from day 0 to 4 positively correlated with worse day 90 NIHSS ($r=0.400$, $p=0.043$), mRS ($r=0.505$, $p=0.008$) and negatively with worse BI ($r=-0.439$, $p=0.025$). RIC reduced SAP levels from pre- to post-intervention ($n=13$, 2-way ANOVA, $p<0.05$), whilst sham did not. No significant changes over time or by treatment, or correlations with outcome were seen for A2M, e-selectin, nitric oxide or VEGF.

Conclusion:
Increased plasma levels of SAP are associated with worse clinical outcomes after ischaemic stroke. RIC reduced SAP levels from pre- to post-intervention. Larger studies assessing biomarkers and efficacy of RIC in acute ischaemic stroke are warranted.