CAN THE USE OF NEW BIOMARKERS TO DIAGNOSE SEPSIS IN BURNS PREVENT INAPPROPRIATE ANTIBIOTICS USE? A SYSTEMATIC REVIEW (P095)

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Sepsis remains the leading cause of mortality in severe burns (>20% total body surface area). Diagnosis by clinical assessment is challenging, as clinical parameters used for diagnosis are mimicked by the SIRS response stimulated by the burn. Sepsis is therefore overdiagnosed resulting in inappropriate antibiotic usage, and resistant organisms. A systematic review was performed to assess new biomarkers which may aid in clinical diagnosis.

The EMBASE and MEDLINE electronic databases were searched, identifying 11 clinical trials, investigating 15 separate biomarker and diagnostic tests. Studies included were full text articles published 2004-2015 in the English language, in patients who had suffered a burn injury. Excluded trials were paediatric subjects, animal studies, and studies reporting outcome.

The trials included in systematic review were 7 prospective observational studies, and 4 retrospective studies. Procalcitonin was the most frequently reported biomarker in 8/11 studies. Significant variation was reported in diagnostic accuracy (AUROC 0.380-0.988) in ability to diagnose sepsis. Two trials investigated haemodynamic factors, Extravascular Lung Water Index (EVLWI), Stroke Index (SI), and Systemic Vascular Resistance Index (SVRI). EVLWI was equivalent in diagnostic accuracy on day -1 of sepsis diagnosis compared to day 0 of procalcitonin (AUROC EVLWI 0.76 vs PCT 0.766). SI and SVRI were also more accurate in diagnosing sepsis and predicting outcome, although observed in a single study (n=54).

The metaanalysis demonstrated positive benefit for the use of procalcitonin, however it may be more of use as component of diagnostic score. Haemodynamic factors have been shown to be more accurate, and result more rapid. Further evaluation of these is required. Limitations of this review included a single researcher, and selective omission of key statistical data preventing further analysis.

Figure 1

Comparison of AUROC between diagnostic tests included in review

Figure 6. Comparison of procalcitonin vs. other diagnostic tests included. Standard error bars included.