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Abstract (oral session)

suPAR level at admission is a strong predictor of mortality in systemic inflammatory response syndrome (SIRS) patients: a cohort study

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Objectives: Soluble urokinase plasminogen activator receptor (suPAR) levels reflect inflammation and elevated suPAR is found in several infectious processes, including bacteraemia, HIV infection, viral infections, malaria and rheumatoid arthritis. The objective of this cohort study was to evaluate the potential of suPAR to predict mortality in systemic inflammatory response syndrome (SIRS) patients. **Methods:** From November 2010 until September 2012 a total of 561 adult patients presenting with SIRS were investigated at the Medical University of Graz, Austria. Blood samples for blood cultures and determination of routine laboratory parameters (including white blood cell count (WBC), C-reactive protein (CRP) and creatinine) and suPAR levels were taken simultaneously with first blood cultures at initial presentation (=day 1). Determination of suPAR was performed using the commercially available kit suPARnostic© and repeated on day 3, 5 and 8. Statistical analysis including multivariate analysis was performed using SPSS v19. **Results:** For day 1 suPAR levels ROC curve analysis revealed an AUC of 0.768 for predicting 30-day mortality (71/561 patients died) and 0.719 for predicting 90-day mortality (86/561 died). AUCs for age (0.567 and 0.522) and CRP (0.563 and 0.532) were significantly lower. Univariate analysis for 90-day mortality revealed that only suPAR was a significant predictor of mortality while age, sex, BMI, WBC, CRP, and even bacteraemia were not. Using multivariate regression analysis suPAR ($p < 0.001$; OR 1.125, 95%CI 1.083-1.168) and bacteraemia ($p = 0.006$; OR 2.981, 95%CI 1.369-6.493) remained significant predictors of 90-day mortality. Similar results were found in multivariate analysis for 30-day mortality (suPAR $p < 0.001$; OR 1.154, 95%CI 1.108-1.202; bacteraemia $p = 0.015$; OR 3.028, 95%CI 1,237-7,407). Correlation analysis revealed a positive correlation of suPAR with age ($p = 0.009$) and creatinine ($p < 0.001$), but not with the duration of hospitalisation ($p = 0.37$). Increasing suPAR values at day 8 when compared to baseline values were significantly associated with 30 ($p = 0.001$, chi square test) and 90-day mortality ($p = 0.021$), increasing suPAR values on day 5 were only associated with 30-day mortality ($p = 0.33$) while development of suPAR between days 1 and 3 did not correlate with mortality. **Conclusion:** suPAR levels at admission were found the strongest predictor for 30- and 90-day mortality in SIRS patients when compared to age, BMI, WBC, CRP and bacteraemia.