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Title: Determining the best diagnostic biomarker for sepsis and prognosis assessment

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Body: Introduction: Current clinical practice lacks reliable diagnostic indicators for sepsis and its prognosis. Objectives: To describe the value of sTREM-1,sCD163,PCT,CRP,WBC and SOFA score during the course of sepsis, as well as their value in prognosis. Methods:130 subjects were picked out of 377 inpatients hospitalized at the RICU,SICU,and EICU. In light of Sepsis Guideline and 28-day survival, the 130 patients were divided into different subgroup. ELISA was applied, and test results were recorded on day 1,3,5,7,10,and 14. Results: On ICU admission day, the sepsis group display higher levels of sTREM-1,sCD163,PCT,and CRP than the SIRS group[180.92 (150.44) pg/ml vs. 29.41(20.77) pg/ml;2.22 (2.36) mg/dL vs. 0.88 (0.23) mg/dL;1.65 (10.1) ng/ml vs. 0.35 (1.58) ng/ml;11.76±8.09 mg/dl vs. 5.65±4.27mg/dl, P<0.05]. Although PCT,sTREM-1 and SOFA are good markers to identify the severity, sTREM-1 is more reliable. It proves to be a risk factor related to sepsis(OR=1.089,95%CI,1.045–1.136); its area under the ROC curve, meant for diagnosis, turns out 0.978(95%CI,0.958–0.997), and that for severity,0.9 (95%CI,0.823–0.977). For 14-day observation,sCD163,sTREM-1,PCT and SOFA continue to climb among non-survivors, while WBC and CRP go down. Both sCD163 and SOFA are risk factors impacting the survival time (HR=1.09,95%CI 1.035–1.154;HR=1.23, 95%CI 1.126–1.335). Their areas under the ROC curve, denoting prognosis, measures 0.696(95%CI,0.593-0.799)and 0.794(95%CI,0.705–0.833) respectively. Conclusion: With regard to sepsis diagnosis and severity, sTREM-1 is more ideal, and constitutes an risk factor. sCD163 and SOFA are of positive value in dynamic prognostic assessment, and may be taken as survival-impacting risk factors.