ANESTHESIOLOGY 2015. Abstracts of America Association of Anesthesiology Conference

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| October 25, 2015 |
| **A2089**  **Validation of the New Biomarker Presepsin for Diagnosis of Sepsis** |
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| INTRODUCTION:  There are various adjunctive biomarkers for diagnosis of infection. These circulating biomarkers are useful not only for diagnosis of sepsis but also as a guide for an antimicrobial strategy in sepsis patients. Presepsin is a soluble N-terminal fragment protein of CD14, which is released from activated phagocytic cells. Several studies have demonstrated the usefulness of presepsin for diagnosis of infection. However, precise evaluation of presepsin has not yet been done. We conducted this study to clarify the validity of presepsin for diagnosis of infection and for evaluation of the severity of sepsis.  METHODS:  Sixty patients who were admitted to our ICU during May 2014 to 2015 were enrolled in this retrospective observational study. Data for patients’ characteristics, including age, gender, body weight, underlying diseases, APACHE II score and SOFA score, were collected from hospital records. Infectious biomarkers, presepsin, CRP and.  **1. Presepsin levels in patients with various diseases**  Presepsin levels in patients with renal failure, acute liver failure (ALF), interstitial pneumonia (IP), sepsis, and in postoperative patients were compared.  **2. Relationships of presepsin level with infection diagnosis and severity of sepsis.** Presepsin levels in patiens without infection or systemic inflammatory response syndrome (SIRS), patients with SIRS but without infection, patients with infection but without SIRS, and patients with infectious SIRS (septic shock/severe sepsis) were compared. Cut-off values of infectious biomarkers were determined by using the area under the curve (AUC) of the receiver operating characteristic curve (ROC). Cut-off values of presepsin levels in sepsis were determined using AUC of ROC. Presepsin levels in sepsis patients were compared with APACHE II score and SOFA score.  **3. Relationship between estimated glomerular filtration rate (eGFR) and presepsin level in patients with chronic kidney disease (CKD) and patients with acute kidney injuary(AKI).**  RESULTS:  **1. Presepsin levels are high in renal failure and sepsis patients.**  Among the various diseases, presepsin levels were high in patients with renal failure or Sepsis. Presepsin levels were less than 500 µg/ml in most of the non-infectious patients with ALF and IP and postoperative patients.  . **2. Cut-off value for diagnosis of infection is 803 µg/ml.**  . Mean values of presepsin in patients without infection or SIRS, patients without infection but with SIRS, patients with infection but without SIRS and patients with infectious SIRS were 401+/-358, 566+/-328, 1581+/-899 and 2884+/-2665, respectively. AUC values of presepsin, PCT and CRP were 0.941 (p=0.012), 0.935 (p=0.015) and 0.681 (p=0.045), respectively. Cut-off values to distinguish from infection were 803 µg/ml for presepsin, 0.7 µg/ml for PCT and 9 mg/ml of CRP.  **3. Presepsin levels in patients without infection increase with a decrease in eGFR.**  In postoperative patients with CKD/AKI, depending on eGFR, stratified by 0-30 ml/min, 30-60 ml/min and more than 60 ml/min, presepsin levels increased with a decrease in renal function. The levels of eGFR in patients with CKD were significantly lower than those of patients with AKI.  . CONCLUSIONS:  Presepsin is a useful adjunctive biomarker for diagnosis of infection. In addition, level of presepsin is correlated with severity of sepsis. However, presepsin levels in CKD patients without infection are extremely high. Care should be taken in diagnosing infection using presepsin in patients with CKD. Further study is needed to clarify appropriate usage of the new biomarker presepsin for diagnosis of infection and for evaluation of sepsis severity. |