Clinical usefulness of measurement of plasma soluble fibrin levels in critically ill patients

doi: 10.1186/cc13397

P207

Clinical usefulness of measurement of plasma soluble fibrin levels in critically ill patients

T Masuda, T Kobayashi, H Takahashi, K Yoshikawa, M Takahashi, E Isotani
Tokyo Women's Medical University Medical Center East, Tokyo, Japan
Critical Care 2014, **18(Suppl 1):**P207 (doi: 10.1186/cc13397)

Introduction The soluble fibrin monomer fibrinogen complex (SF) is a complex coupling fibrin monomer and fibrinogen molecules. As the level of SF reflects the thrombin generation activity in plasma, we may estimate the early-activated state of blood coagulation by the measurement of SF. The aim of this study is to evaluate the clinical usefulness of SF for the hypercoagulated state.
Methods We measured the plasma level of SF in 63 patients within 48 hours after admission and on the 1st, 3rd, 5th and 7th days after admission. Underlying disease mainly includes sepsis, shock, and so on. According to the disseminated intravascular coagulation diagnostic criteria established by the Japanese Association of Acute Medicine, we defined the DIC group as JAAM-DIC score more than 3 within 48 hours after admission, the Subclinical DIC group as score more than 3 within 7 days beyond 48 hours after admission, and the No DIC group as score less than 4 during the entire study period. The SF value of each group was compared with the Mann–Whitney U test.
Results The SF values in the DIC and the Subclinical DIC groups were significantly higher than in the No DIC group. We created the receiver operating characteristic curve of SF value for DIC onset (JAAM-DIC score ≥4) and the SF value of 35 μg/ml was set as the cutoff SF value. The high SF group (SF ≥35 μg/ml) had significantly higher JAAM-DIC score, SOFA score and APACHE II score than the low SF group (SF <35 μg/ml). Mainly in the high SF group except DIC patients on admission, we found that SF increased before the JAAM-DIC score changed. See Figures 1 and 2.
Conclusion We think measurement of the plasma SF level may be clinically useful in evaluating the severity of critically ill patients such as those with sepsis.

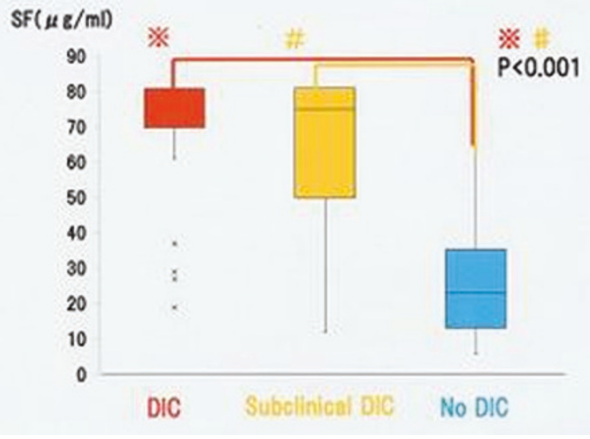

Figure 1 (abstract P207). SF values of the DIC, Subclinical DIC and No DIC groups.

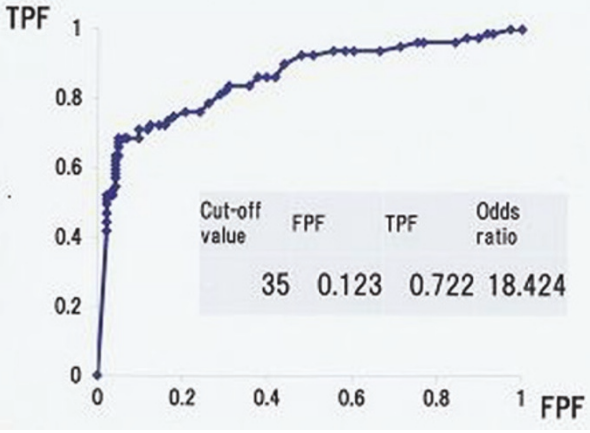

Figure 2 (abstract P207). ROC curve of the SF value for DIC.

P208

Value of microbial metabolites in blood serum as criteria for bacterial load in the pathogenesis of hemodynamic disorders in critically ill patients

Y Sarshor, N Beloborodova, V Moroz, A Osipov, A Bedova, E Chernevskaya, M Getsina
Negovsky Research Institute of General Reanimatology, Moscow, Russia
Critical Care 2014, **18(Suppl 1):**P208 (doi: 10.1186/cc13398)

Introduction Hemodynamic disorders in critically ill patients are often connected with bacterial load. Bacterial load is usually associated with bacteremia, LPS, high level of IL-6, PCT and also with aromatic microbial metabolites [1-3], and so forth. In our opinion, microbial metabolites can participate in hemodynamic disorders in critically ill patients, particularly due to their influence on NO production [4] and intestinal permeability.
Methods In a prospective study we observed critically ill patients on the day of admission to a polyvalent ICU, severe cardiac pathology was excluded. The level of phenylpropionic, phenyllactic, p-OH-phenyllactic, p-OH-phenylacetic acids and total phenylcarboxylic acids (PhCAs) were measured in blood serum using gas chromatography (GC-FID). The level of PCT and NT-proBNP were measured using Elecsys 2010. Comparison between patients with hypotension (on vasopressor support) (group A) and without (group B) was performed.
Results We studied 50 ICU patients with different diseases: pneumonia (n = 15), severe kidney failure (n = 13), abdominal surgical pathology (n = 10), alcoholic cirrhosis (n = 5), soft-tissue infection (n = 7). In group A (24/50) the median of PhCAs was 17.8 (IR 11.4 to 30.0) μmol/l, and in group B (26/50) it was 7.2 (IR 3.7 to 13.2) μmol/l, P = 0.003 (t test). In group A, all patients (with or without documented infections) had symptoms of infection manifestation [5], 20/24 (83.3%) of them died. In group B, the symptoms of infection manifestation were revealed in 12/26 (46%) cases, and the mortality was significantly lower, 3/26 (11.5%) (P <0.05). General mortality was 23/50 (46%). The profile of PhCAs differed in groups A versus B.
Conclusion The total level of PhCAs in critically ill patients with hypotension was considerably higher than in hemodynamically stable patients. The participation of microbial factor in pathogenesis of hemodynamic disorders in the presence of systemic inflammation may be validated with the load of microbial metabolites (PhCAs).
Acknowledgement This work was supported by the Russian Foundation for Basic Research (project number 13-04-01758/13).
References

1. Beloborodova N, *et al.*: *Crit Care* 2009, **13:**41.
2. Sarshor Yu, *et al.*: *Shock* 2013, **40(Suppl 1):**31.
3. Beloborodova N, *et al.*: *Biochemistry* 2009, **74:**1350-1355.
4. Ogiwara T, *et al.*: *Anticancer Res* 2003, **23:**1317-1323.
5. Dellinger RP, *et al.*: *Crit Care Med* 2013, **41:**580-637.

P209

Fibrinogen at admission is an independent predictor of mortality in severe sepsis and septic shock

M Azfar, M Khan, M Khurshid
King Saud University, Riyadh, Saudi Arabia
Critical Care 2014, **18(Suppl 1):**P209 (doi: 10.1186/cc13399)

Introduction Coagulation abnormalities are common in severe sepsis or septic shock [1].
Methods A prospective observational cohort study of 100 patients above 18 years of age diagnosed with severe sepsis or septic shock on admission. The first blood sample collected on admission was analyzed. Data were collected through a predesigned *pro forma*. Those with previous history of any coagulation disorders were excluded.