Introduction:
Endotoxin is a major component of the cell wall of Gram-negative bacteria and is the principal molecule responsible for the induction of septic shock. A prospective cohort study (MEDIC study) of 857 consecutive new ICU patients evaluated the usefulness of endotoxin activity assay (EAA) as a diagnostic tool in sepsis and septic shock.

Methods:
This study was performed to classify EAA values measured within 24 hours of ICU admission into a high risk (H) group (EAA>0.6; N=154; mean age ± SD = 64±13; median 70) and a low risk (L) group (EAA<0.4; N=174; 68±16; 72), and then, to evaluate patient severities (APACHE 2 score, SOFA score) and sepsis-related biomarkers (procalcitonin, IL-6, angiopoietin 2), comparing groups. Results were expressed as the mean ± SD (median). The Mann-Whitney U-test and chi-square test or Fisher’s test were used for statistical analysis.

Results:
The APACHE 2 score of the H-group was 26.5±9.5 (27.0), while that in the L-group was 19.9±9.1 (18.0), and the difference between the groups was statistically significant (p<0.05). The SOFA score of the H-group was 9.6±4.1 (10.0) and that of the L-group was 7.2±4.6 (6.5) (p<0.05).

PCT of the H-group was 37.8 ±58.5 11.7 and that in the L-group was 9.6±25.5 (1.6), but there was no significant difference between the groups. IL-6 of the H-group was 19,483±61,281 (1160) and that of the L-group was 6256±39,321 (144). Angiopoietin 2 of the H-group was 12,822±10,593 (10,100) and that in the L-group was 6004±4441 (4105). These two biomarkers indicated significant differences between the groups.

Survival rate of the H-group was 78.9% (153 survived, 41 died), and that of the L-group was 85.5% (147 survived, 25 died). Statistically, there was no significant difference between the groups.

Conclusion:
These results indicate that the EAA value measured within 24 hours after ICU admission is a useful marker for a patient’s severity assessment, but not for outcome prediction.