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### Clinical usefulness of procalcitonin assay to diagnose sepsis: Proposal and evaluation of PCT-qSOFA

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Sepsis is a leading cause of morbidity and mortality, but it is difficult to define sepsis. In sepsis-3, the recent definition, sepsis is defined as an infection-induced long-term failure and the quick sequential organ failure assessment (qSOFA) makes it easy to identify septic patients. However, qSOFA shows a considerable discrepancy, compared with first sepsis definition, which is focusing on abnormal immune responses. The purpose of this study is to improve the low sensitivity of qSOFA. We propose 'PCT-qSOFA' by adding 'procalcitonin (PCT), a useful biological indicator with high sensitivity and specificity to septicemia diagnosis and evaluated the clinical usefulness of 'PCT-qSOFA'.

Total 102 cases with laboratory-confirmed bloodstream infection (BSI) and 102 cases with results of negative blood culture (BC) repeatedly were included for 1 year (2016.5-2017.4). BC, PCT test, qSOFA and systemic inflammatory response syndrome (SIRS) scoring were done in the same day and BSI cases only included definite pathogens (*Staphylococcus aureus*, *Enterococcus spp.*, *Klebsiella pneumoniae* and *Escherichia coli*). Total 204 cases were divided to 4 groups such as bacterial sepsis (BSI+ and

SIRS+), BC-negative sepsis (BSI-, SIRS+), BC-positive without SIRS and control (BSI- and SIRS-).


In results, PCT alone detects 87.5% of sepsis and qSOFA alone detects 77.2% of sepsis. PCT-qSOFA increased posttest probability (PCT-qSOFA detects 88.4% of sepsis). The area under the receiver operating curve (AUC) was 0.701 for PCT and 0.610 for qSOFA in receiver operating characteristic (ROC) analysis. PCT and qSOFA have prognostic values. qSOFA can be used in ICU patients but the revision of cut-off for qSOFA is needed for best diagnostic performance.

In conclusion, the application of 'PCT-qSOFA' is useful for septicemia diagnosis. We hope that it will help rapid and accurate detection of sepsis.

#### Speaker Biography

Young Ah Kim is an expert in laboratory medicine. Her main research interests are diagnostic methodology of clinical microbiology and antimicrobial resistance. She is performing studies about an effective diagnostic strategy of infectious disease and transmission model of antimicrobial resistance genes in the community.

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