■ Sat-233 ■

Comparison of SOI scoring systems for predicting prognosis in ventilated patients with MDRbacteremia

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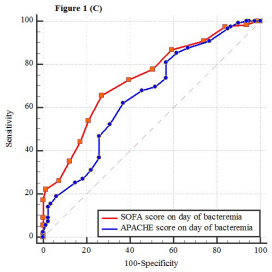
Background/Aims: In ventilated patients with multidrug-resistant bacteremia (MDR), there are few SOI(Severity of illness) scoring systems for mortality prediction. We compared Acute Physiology and Chronic Health System (APACHE) II with Sequential Organ Failure Assessment (SOFA) score on the day of bacteremia for predicting prognosis in these patients. **Methods:** All consecutive 203 ventilated patients with MDR bacteremia in a single tertiary care hospital during seven years were enrolled. Patients with at least one of the following six MDR bacteremias were included: methicillin-resistant Staphylococcus aureus (MRSA), extended-spectrum β-lactamase producing gram-negative bacteria (Escherichia coli and Klebsiella pneumonia), carbapenem-resistant gram-negative rods [Acinetobacter baumannii (CRAB) and Pseudomonas aeruginosa], and vancomycin-resistant Enterococcus faecium. Receiver operating characteristic (ROC) curves and the area under the curve (AUC) were used, and identification of an optimal cut-off value was based on the maximum Youden's index. **Results:** Their median age of 64 years (range 18-95) and 60.6% were male. Respiratory infection (48.3%) was the most common source of bacteremia. MRSA and CRAB were the most commonly identified microorganisms (38.4 and 31.0%, respectively). Their 28, 60 and 90-day mortality after bacteremia were 49.3, 57.1 and 60.1%, respepctively. The median APACHE II and SOFA score on day of bacteremia were 19 (range 5-38) and 9 (1-20), respectively. There were no differences of AUC between SOFA and APACHE II score on day of bacteremia for predicting 28-day (AUC; 0.730, 95% CI 0.662-0.799 vs 0.693, 0.621-0.965, p-value 0.32) and 60-day mortality (AUC; 0.713, 95% CI 0.642-0.784 vs 0.654, 0.578-0.731, p-value 0.12). However, SOFA score was significantly higher than APACHE II score (AUC; 0.731, 95% CI 0.662-0.800 vs 0.654, 0.576-0.732, p-value 0.038) for prognostic accuracy of 90-day mortality. Also, the cut-off values of SOFA score for 90-day mortality was 8 (sensitivity 41 %, specificity 87 %). **Conclusions:** In our study, SOFA score on the day of MDR bacteremia would be associated with higher prognostic accuracy of 90-day mortality compared with APACHE II score.



Receiver operating characteristic curves of SOFA and APACHE II scores on the day of blood culture collection predicting 28-day (A), 60-day (B), and 90-day (C) mortality after blood was drawn. There were no differences of AUC between SOFA and APACHE II score on day of bacteremia for predicting 28-day (AUC; 0.730, 95% CI 0.662-0.799 vs 0.693, 0.621-0.965, p-value 0.32) and 60-day mortality (AUC; 0.713, 95% CI 0.642-0.784 vs 0.654, 0.578-0.731, p-value 0.12). However, SOFA score was significantly higher than APACHE II score (AUC; 0.731, 95% CI 0.662-0.800 vs 0.654, 0.576-0.732, p-value 0.038) for prognostic accuracy of 90-day mortality. SOFA; Sequential Organ Failure Assessment, APACHE: Acute Physiology and Chronic Health Evaluation; AUC: Area under the curve; CI: Confidence interval.

Table 1. Demographic and clinical characteristics of all enrolled patients

Characteristic	Total (n = 203)
Age, years	64 (18-95)
Male sex	123 (60.6)
Hospital LOS, days	40 (2-431)
ICU LOS, days	23 (1-430)
Duration of MV, days	17 (1-430)
Comorbidities	
Cardiovascular disease	64 (31.5)
Diabetes mellitus	55 (27.1)
Hemato-oncological disease	44 (21.7)
Cerebrovascular disease	31 (15.3)
Chronic renal disease	28 (13.8)
Chronic lung disease	15 (7.4)
Chronic liver disease	13 (6.4)
Neuromuscular disease	12 (5.9)
Biliary disease	9 (4.4)
Gastrointestinal disease	8 (3.9)
Rheumatological disease	8 (3.9)
Infection source	
Respiratory	98 (48.3)
Vascular catheter-related	46 (22.7)
Intraabdominal	26 (12.8)
Musculoskeletal and soft tissue	15 (7.4)
Urinary	9 (4.4)
APACHE II score[a]	19 (5-38)
SOFA score[a]	9 (1-20)
Microorganism identified	
Methicillin-resistant *Staphylococcus aureus*	78 (38.4)
Carbapenem-resistant *Acinetobacter baumannii*	63 (31.0)
ESBL(+) *Klebsiella pneumoniae*	25 (12.3)
Vancomycin-resistant *Enterococcus faecium*	25 (12.3)
ESBL(+) *Escherichia coli*	18 (8.9)
Carbapenem-resistant *Pseudomonas aeruginosa*	6 (3.0)
28-day mortality[b]	100 (49.3)
60-day mortality[b]	116 (57.1)
90-day mortality[b]	122 (60.1)

The data are presented as median (range) or number (%). APACHE, Acute Physiology and Chronic Health Evaluation; ESBL, extended-spectrum β-lactamase-producing; LOS, length of stay; MV, mechanical ventilation; NMB, neuromuscular blockade; RRT, renal replacement therapy; SOFA, Sequential Organ Failure Assessment.
[a]Based on the clinical data that were recorded on the day on which blood was drawn.
[b]Survivors were defined as patients who survived for 28, 60 and 90 days after blood was drawn.

■ Sat-234 ■

A case report of Osler- Rendu-Weber disease with family pedigree

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Introduction: Osler-Rendu-Weber disease, a clinical condition also known as Hereditary hemorrhagic telangiectasia (HHT) is an Heraditary disease which is autosomal dominantly inherited. Patient may suffer from various bleedings, from recourrent epistaxis to gastrointestinal bleeding, hemoptysis and following iron deficiency anemia. Brain, Lung, GI tracks and Liver should be screened for possible AVM. Bleeding as complications of AVM can be life threatening, though patients with adequate treatment and healthcare support shows normal life expectancies. **Case report:** A 57-year-old woman was admitted with cough and abnormal chest PA finding. She had a family History of various bleeding: Her daughter had been diagnosed with AVM 10 year ago and died from massive pulmonary bleeding a year ago. Her mother died of a week of hematemesis. The patient's pulmonary arteriography showed multiple AVM in both lungs. Serial workup for Osler- Rendu-Weber disease was done with following results: Enhance CT abdomen Pelvis revealed Heterogeneous enhancement of liver with probable shunt. Brain MRI showed No AVMs in brain parenchyma. Laboratory findings were as follows: Initial Hemoglobin 16.5g/dL with normal MCV, MCH, MCHC. Upon physical examination, there was no evidence of abnormal lung sound or GI bleeding. Considering Family Hx, a genetic study was done. The result showed c.-127C > T mutation which is known to cause decrease in alternative translation initiation sequence and ENG transcript leading to arteriovenous malformation causing famous recurrent epistaxis and many possibly life threatening bleedings in major organs. The patient discharged after lung AVM embolization using multiple microcoils. **Discussion:** HHT is known to be a hereditary disease. This case is meaningful in that clear family history taking was done which revealed many deaths suspicious to be related with HHT. The patient had clear family history of autosomal dominant bleeding tendency and the completed pedigree shows affected parents have unaffected children, a typical form of autosomal dominantly inherited disease.