

The predictive and diagnostic accuracy of vascular endothelial growth factor and pentraxin-3 in severe dengue

ABSTRACT

This study aimed to evaluate vascular endothelial growth factor (VEGF) and pentraxin 3 (PTX-3) as predictive and diagnostic markers in differentiating severe dengue from non-severe dengue. The study was conducted in Ampang Health Clinic, Ampang Hospital and Serdang Hospital. The plasma levels of VEGF and PTX-3 were compared between severe dengue and non-severe dengue by ELISA from the day of presentation until discharged. Multiple logistic regression was used to develop predictive and diagnostic models by incorporating other clinical parameters. The receiver operating characteristics (ROC) analysis was used to assess the accuracy of the biomarkers and the developed models. Eighty-two patients were recruited, 29 with severe dengue and four died. The Area Under the Curve (AUC) was statistically significant in VEGF as diagnostic marker at Day 2 and 3 of illness with sensitivity of 80.00%-100.00% and specificity of 76.47%-80.00%. The predictive model with AUC of 0.84 ($p < 0.01$) has a sensitivity of 100.00% and specificity of 79.25% for predicting severe dengue. The diagnostic model with AUC of 0.71 ($p < 0.01$) has a sensitivity of 76.19% and specificity of 73.58% for diagnosing severe dengue. The AUC for PTX-3 was not statistically significant. VEGF may be used in combination with other clinical parameters to predict the severity of the disease. As a single biomarker, it may be used as an adjunct investigation to support the diagnosis of severe dengue. PTX-3 was not able to differentiate severe dengue from non-severe dengue.

Keyword: Severe dengue; Screening; Predict; Diagnostic; Accuracy