Combined diagnostic performance analysis

Combined diagnostic performance was investigated using a binary logistic regression with a value of 1 coding for cerebral infarction and 0 for non-cerebral infarction. This resulted in a constant of –4.19, a beta of 0.35 for NLR (P<0.001), 0.57 for male (P=0.046), 0.81 for smoking (P=0.023), 0.99 for diabetes (P=0.001), and 1.06 for hypertension (P=0.001). Predicted logit is a single value representing the outcomes from NLR, smoking, diabetes, and hypertension.

Predicted logit =–4.19+(0.35× NLR) +(0.57× male) +(0.81× smoking) +(0.99× diabetes) +(1.06× hypertension)

From this formula, a predicted probability was calculated using the following formula:

$$\text{Predicted probability} = \frac{e^{\text{predicted Logit}}}{1 + e^{\text{predicted Logit}}}$$

e = Euler's number (2.71828)

The predicted probability is a number between 0 and 1. The patient has a high possibility of cerebral infarction when the predicted probability is closer to 1. A value close to 0 represents a low probability of cerebral infarction. And the predicted probability data was used to calculate the AUC value of the combined model. A predicted probability >0.15173 was calculated as the best cutoff value of the combined model.