Risk stratification on admission for predicting death or need for surgery in patients with acute type A intramural hematoma receiving medical therapy – validation cohort

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Background: There has been continuing discussion regarding the treatment strategy for acute type A intramural hematoma (IMH). We previously examined the risk factors of death or need for surgery for acute type A IMH in patients receiving medical treatment using clinical findings on hospital arrival and developed a simple risk score using the factors.

Purpose: We examined the accuracy of the risk score in the validation cohort.

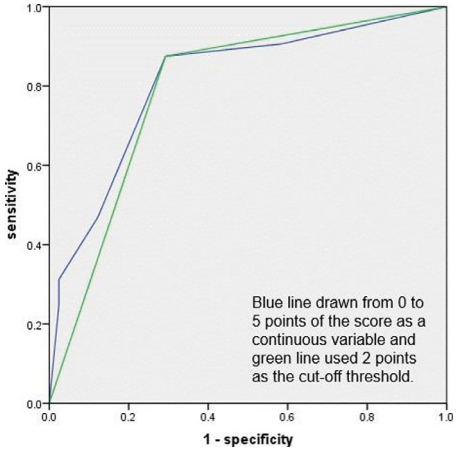
Methods: From 2009 to 2014, 57 consecutive patients diagnosed with acute type A IMH who were receiving initial medical treatment were retrospectively included for derivation cohort. Primary endpoint was a composite of cardiovascular death and operation within 1 year after onset. On admission, the primary endpoint could be predicted with 89.7% sensitivity and 75% specificity if the patient had ulcer-like projection (ULP) and/or $\geq$2 of the following factors: systolic blood pressure (SBP) $<$120 mmHg, ascending aorta diameter$>$45 mm, and pericardial effusion (PE). In the current study, validation cohort study was performed from 2015 to 2020 in 73 consecutive patients who met the same inclusion criteria for derivation cohort to evaluate the risk factors and the accuracy of the risk score.

Result: Mean age of onset was 74 years old. Mean SBP on arrival was 134 mmHg. Computed tomography (CT) on arrival showed a mean ascending aorta diameter of 46 mm. ULP and PE were seen in 27% and 41% of cases, respectively. Thirty-three patients (45.2%) reached the primary endpoint (cardiovascular death, 8 cases [11%]; operation, 25 cases [34.2%]). In univariate analysis of admission values, the primary endpoint group had significantly lower SBP (116±29 vs 147±35 mmHg), higher ascending aorta diameter (49±8 vs 45±9 mm), and higher frequency of ULP (50% vs 10%) and PE (56% vs 29%) than did the event-free group. Multivariate analysis showed that ULP and SBP were significant predictors of the primary endpoint. The total risk score $\geq$2 could predict the primary endpoint with 87.5% sensitivity and 71.7% specificity (area under the receiver operating characteristic curve, 0.791).

Conclusion: The risk score was useful to predict cardiovascular death and the need for surgery in patients with acute type A IMH receiving medical therapy in the validation cohort study.

Risk score for acute type A IMH

Risk score for acute type A IMH ($\geq$2 points are positive)	Point
SBP on arrival $<$120 mmHg	1
PE on admission CT	1
Ascending Ao diameter on admission CT $>$45 mm	1
ULP on admission CT	2



ROC curve for the risk score