Prognostic Impact of CHA2DS2-VASc-HS Score on Midterm Clinical Outcomes After Elective PCI for Chronic Coronary Syndrome:
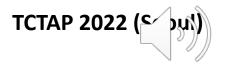# A Single-center Retrospective Study

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Background

- The CHADS2 and CHA2DS2-VASc scores are clinical predictors used to evaluate the risk of cardiac thromboembolism.
- These scores have been demonstrated to have predictive values in terms of the risks of stroke and death in patients with ACS and CCS.
- Recently, newly defined CHA2DS2-VASc-HSF scores, adding, male gender instead of female as sex category, hyperlipidemia, smoking, and family history of CAD in those scores, could predict CAD severity.
- However, the prognostic impact of CHA2DS2-VASc-HS(F) score on the Japanese patients with CCS was not fully understood.

CHA2DS2-VASc-HS(F) scores

- **C: Congestive heart failure (1 point): heart failure (signs/symptoms of heart failure confirmed with objective evidence of cardiac dysfunction**
- **H: Hypertension (1 point): defined as measurements of systolic and diastolic blood pressure ≥ 140/90 mm Hg or taking antihypertensive medications**
- **A2: Age > 75 years (2 point)**
- **D: Diabetes mellitus (1 point): defined as a fasting blood glucose level > 126 mg/dL or blood glucose ≥ 200 mg/dL or using antidiabetic drugs**
- **S2: Previous stroke or TIA (2 point): previous ischaemic stroke or transient ischemic attack (TIA)**
- **V: Vascular disease (1 point): defined as myocardial infarction [MI] and peripheral artery disease including prior revascularization, amputation or angiographic evidence or aortic plaque**
- **A: Age 65–74 years (1 point)**
- **Sc: Sex category (male gender) (1 point)**
- **H: Hyperlipidemia (1 point): defined as increased level of low density lipoprotein cholesterol (LDL-C) according to the National Cholesterol Education Program-3 recommendations and history of using lipid lowering medications**
- **S: Smoking (1 point): defined as smoking > 10 cigarettes a day for at least one year without a quit attempt**
- **F: Family history of CAD (1 point): MI before 55 years of age for men or 65 years of age for women in first-degree relatives**

Maximum score = 12(11) points

Aim

We retrospectively examined the association of
CHA2DS2-VASc-HS score on midterm clinical outcomes
after elective PCI for chronic coronary syndrome (CCS)
in our daily practice environments.

Method

- Enrollment: Consecutive 588 de novo coronary stenosis in 376 patients with CCS successfully re-vascularized during from 2017 January to 2019 December.

- Grouping: divided into 2 groups with the total CHA2DS2-VASc-HS points of 6: Low (n=483) and High (n=105) groups.

- Endpoint: The primary clinical endpoint was the incidence of target lesion failure (TLF) comprising of cardiac death including sudden death, non-fatal myocardial infarction, and any target vessel revascularization (TVR).

Results (Baselines)

	High	Low	p-value
	105	483	
Age (yr)	76.3±6.0	68.0±10.7	<0.001
Age>=75 (%)	1.43±0.91	0.61±0.92	<0.001
Female (%)	45.7	14.5	<0.001
Hypertension (%)	100.0	87.0	<0.001
Diabetes (%)	20.0	8.9	<0.001
Hyperlipidemia (%)	100.0	97.5	0.103
Smoking (%)	61.0	42.9	0.001
CHF / LowEF (%)	32.4	6.0	<0.001
Vascular disease (%)	47.6	26.1	<0.001
Hemodialysis (%)	5.7	3.9	0.412
CKD3b5 (%)	55.2	19.0	<0.001
Previous PAD (%)	24.8	3.3	<0.001
Previous PCI (%)	40.0	41.6	0.761
Previous CABG (%)	4.8	4.6	0.927
Previous MI (%)	27.6	23.2	0.335
LVEF<=35 (%)	15.2	3.1	0.103
Stable AP	59.0	65.8	0.187
OMI	35.2	27.5	0.115
LAD	33.3	40.8	0.157
ACC/AHA type B2/C	84.8	74.9	0.031
Diffuse	33.3	33.7	0.935
Calcification	21.9	16.6	0.192
Ostium	13.3	8.7	0.142
Number of balloon/stent	1.22±0.50	1.18±0.45	0.462
Size of balloon (mm)	3.03±0.74	3.10±0.65	0.355
Length of balloon (mm)	28.9±20.3	28.0±18.0	0.677
Rotablator use (%)	5.9	2.9	0.149

Results (Outcomes)

	High	Low	p-value
	105	483	
Observational Interval (day)	652±468	722±459	0.163
Primary endpoint (%)	20.0	8.9	0.001
All-cause death (%)	11.4	3.3	<0.001
In-hospital mortality (%)	1.0	0	0.032
Cardiac death (%)	7.0	0.2	<0.001
Non-fatal myocardial infarction (%)	1.0	0.2	0.234
Acute occlusion/Definite ST (%)	0	0	1.000
Angiographic TVR (%)	8.6	5.4	0.211
Angiographic TLR (%)	8.6	6.0	0.332
Clinical TLR (%)	6.7	2.3	0.018

Results

Cumulative endpoint-free ratios

Low group

High group

P<0.001 by Log-rank test

Clinical observational interval (day)

Results

**High group (CHA2DS2-VASc-HS score >= 6) was
the single predictor of the primary endpoint
among the baselines by Cox proportional hazard model
(Hazard ratio: 2.26, 95%CI: 1.30-3.93, p=0.004).**

Summary

- We examined whether the newly defined CHA2DS2-VASc-HS score has the prognostic impact of patients of CCS, because this score was comprising by multiple risk factors of CAD.

- Consecutive 588 de novo coronary stenosis in 376 patients with CCS successfully re-vascularized during from 2017 January to 2019 December in our institute were divided into 2 groups by the 6 points of CHA2DS2-VASc-HS score.

- Multiple baseline variables in the High score group were significantly different from those of the Low score groups.

- CHA2DS2-VASc-HS score more than 6 was the single predictor of the primary endpoint by Cox proportional hazard model (Hazard ratio: 2.26, 95%CI: 1.30-3.93, p=0.004).

Conclusion

The present retrospective single center analysis showed the significant relevant prognostic impact of CHA2DS2-VASc-HS Score on midterm clinical outcomes after elective PCI for patients with CCS.