



CASE REPORT: STROKE PREDICTION MODELS AFTER TRANSIENT ISCHEMIC ATTACK WITH ATRIAL FIBRILLATION

Mason Rubianto, Samudra Andi Yusuf, Stefano Giovani

Bhakti Rahayu Hospital, Denpasar, Bali, Indonesia

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Korespondensi: masonrubianto@gmail.com

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ABSTRACT

Background: Atrial fibrillation (AF) is an independent risk factor for stroke. The role of AF in Transient Ischemic Attack (TIA) is less common but requires attention due to the increased risk of getting a stroke.

Case: A 80-year old woman presented with two hours onset of speech disturbance and disorientation. Patient was somnolent with Glasgow Coma Scale total 13 (E4V3M6), blood pressure was 150/80 mmHg and heart rate 147 beats/min irregular. There was VII supranuclear and XII supranuclear cranial nerve palsy without unilateral weakness which completely resolved under 24 hours. ECG showed AF. Patient was diagnosed with TIA and AF and hypertension stage 1.

Discussion: Early risk of stroke was best predicted with ABCD2 score with previous TIA, calculated based on five factors, i.e. age, blood pressure, clinical features and duration of TIA, diabetes. ABCD2 score of this patient was 5 (moderate risk).

Conclusion: Patients with TIA and AF require an additional imaging consideration because both are major risk factors of ischemic stroke.

Keywords: Atrial Fibrillation, ABCD2 Score, Stroke, Transient Ischemic Attack

Background

Atrial fibrillation (AF) is an independent risk factor for stroke and a significant predictor for mortality.¹ There are modified and non-modified risk factors in stroke. Non-modified such as age, gender, race, Transient Ischemic Attack (TIA) history and genetic. Modified such as high blood pressure, AF, diabetes, smoking, dyslipidemia and obesity. The proportion of AF among patients with ischemic stroke (IS) ranging from 19% to 38%. The role of AF in IS is already well established, whereas the role of AF in TIA is less common. However, based on data from large national TIA and stroke registers in Sweden, have shown that the proportion of known or recently diagnosed AF in patients with TIA is 18.6%. Thus, this situation cannot be underestimated and need to be carefully assessed, because both TIA and AF are major risk factors that can increasing the risk of a patient to get stroke.² Based on data from Riset Kesehatan Dasar (Riskesdas) 2018, prevalence of stroke in Indonesia is 10.9 %³

Case Report

A 80 year old woman presented to our emergency department with speech disturbance and disorientation which lasted for 2 hours. She also experienced palpitation. A month ago, she

experienced the same symptoms. She had a medical history of hypertension and also atrial fibrillation. She took bisoprolol 2,5 mg, clopidogrel 75 mg and amlodipin 5 mg daily for a month. On arrival, patients look confused with Glasgow Coma Scale of total 13 (E₄V₃M₆), her blood pressure was 150/80 mmHg and heart rate 147 beats/min irregular. From neurological examination, there was VII supranuclear and XII cranial nerve palsy without unilateral weakness which then completely resolved in 24 hours. Her electrocardiograph showed atrial fibrillation (Figure 1). Other routine blood tests showed hyponatremia (133 mEq/L). Working diagnosis for this patient were TIA with AF and hypertension stage 1. Patient were received clopidogrel 75 mg, bisoprolol 2,5 mg and amlodipin 5 mg. In addition, she was also given injection of citicoline 2 x 250 mg. Patient was hospitalized for 4 days and discharged after showing improvement in medical condition. However 7 days after being discharged, the patient was readmitted, now with unilateral weakness, AF and tachycardia. After CT-scan we can confirm patient is having an ischemic stroke (Figure 2).

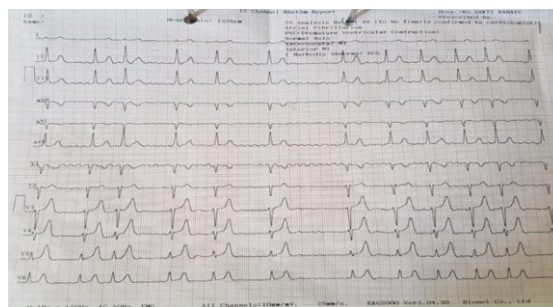


Figure 1. Irregular R-R interval with heart rate 125 beats/min indicates an atrial fibrillation from ECG result

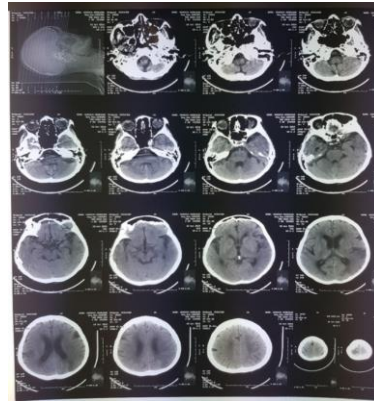


Figure 2. Cerebral infarction on left cortical parietooccipital lobe

Discussion

There are several prediction models that have been developed to predict stroke after TIA such as California, Oxford or ABCD. However, at present, early risk of stroke seems to be best predicted with ABCD2 because they have the best sensitivity among other prediction models. ABCD2 score is calculated by summing up points for five independent factors: age, blood pressure, clinical features of TIA, duration of TIA and diabetes (Table 1).

Table 1. ABCD2 score

| Criteria | Cut off value | score |
|-----------------------|--------------------------------------|-------|
| Age | ≥ 60 years old | 1 |
| Blood Pressure | ≥ 140/90 mmHg | 1 |
| Clinical Presentation | Unilateral weakness | 2 |
| | Speech disturbances without weakness | 1 |
| Duration of TIA | ≥60 minutes | 2 |
| | 10 - 59 minutes | 1 |
| Diabetes | Yes | 1 |

ABCD2 score divided into 3 categories (0-3 mild, 4-5 moderate, and 6-7 high), a score ≥ 4 would urge doctors to initiate patient admission for initial treatment and observation. ABCD2 score of the patient is 5 which is classified as moderate risk. This means that the patient had a 4.1% 2-days stroke risk, 5.9% 7-days stroke risk and 9.8% 90-days stroke risk.⁴ Nevertheless, this scoring doesn't

include AF as a factor, while AF already proven to increase the risk of ischemic stroke by 3-5 times.⁵ Thus, this patient require holistic approach and perhaps imaging consideration because this symptoms already present a month before. This case is interesting because this patient already has moderate risk of stroke caused by TIA and she also

has AF which increase the risk of ischemic stroke by 3-5 times alone. Both are major risk factors for developing ischemic stroke. This theory was proved in this patient because she readmitted a week after discharge from hospital with more severe condition such as unilateral weakness and diagnosed as ischemic stroke. Based on research article from Norway, Low ABCD2 score predicted very low risk of stroke. However, patients with a high score also had a low risk of stroke. Urgent assessment and intervention are likely the main reasons for this.⁶ European stroke organisation make a several recommendation in 2019.⁷ In patients with non-valvular AF and previous ischemic stroke or TIA, they do not recommend antiplatelet agents, either as single or dual therapy for secondary prevention. Vitamin K Antagonists (VKA) such as warfarin is recommended for secondary prevention. European Stroke Organisation recommended non-vitamin K antagonist oral anticoagulants (NOAC) over vitamin K antagonists for secondary prevention of stroke. So with the high quality of evidence and strong recommendation, we can assume that NOAC is the best treatment to prevent TIA with AF to develop into ischemic stroke. In addition, this patient should

be given either vitamin K antagonist or NOAC rather than antiplatelet based on the latest evidence.

Conclusion

The combination of history taking, clinical presentation and ECG allowed us to make the diagnosis of TIA with AF and hypertension stage I. Patients with TIA and AF require a comprehensive

approach and additional an imaging consideration because both are major risk factors of ischemic stroke. NOAC or VKA should be used as treatment for patients with TIA and AF to prevent this condition develop into ischemic stroke.

Conflict of Interest

None.

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