Challenges in anticoagulation therapy following ischemic stroke in patients with atrial fibrillation

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INTRODUCTION

Atrial fibrillation (AF), is the most significant risk factor for ischaemic stroke, with an increased risk of almost sevenfold, with more than 20% of strokes in England and Wales resulting secondary to AF¹. Patients are also at high risk of recurrent stroke², poorer neurological outcome, increased mortality and longer hospital stays.

Age related increase in AF prevalence in Europe³.

Oral anticoagulation (OA) has been proven to be an effective risk reducing treatment, however its optimal timing is under constant review, as it appears that the the most favorable outcome is largely patient specific. It has been shown that patients with early recanalization have better outcomes at 3 months and lower mortality⁴ however, in patients presenting with AF, the early initiation of OA is delayed due to an increased risk of haemorrhagic transformation, particularly intracerebral haemorrhage (ICH)⁵.

Currently, the most important and commonly used scheme to stratify the risk of stroke in AF patients comprises the CHA2DS2-VASc score a development of the earlier CHA2DS2 criteria yet now being more inclusive. This scheme incorporates additional risk factors for stroke, classifying patients into low to high risk categories for which subsequent management is directed accordingly. This can be validated alongside the HAS-BLED scoring system which is one of the multiple tools used to evaluate risk of bleeding in AF patients. Together, these can be used synonymously to identify correct management and importantly, address any reversible risk factors identified which can aid recovery.

CHA2DS2-VASc Risk	Score
CHF or LVEF ≤ 40%	1
Hypertension	1
Age ≥ 75	2
Diabetes	1
Stroke/TIA/Thromboembolism	2
Vascular Disease	1
Age 65 - 74	1
Female	1

Clinical Characteristic	Score
H Hypertension	1
A Abnormal renal or liver function (1 each)	1 or 2
S Stroke	1
B Bleeding	1
L Labile INR	1
E Elderly age	1
D Drugs or alcohol (1 each)	1 or 2
Maximum Score	9

Criteria of CHA2DS2-VASc and HAS-BLED. Increased score of CHA2DS2-VASc resulting in subsequent heightened risk of stroke and HAS-BLED risk of bleed.

CASE

We report a case, of a 62 year old patient presenting with a left TACI. She had a thrombus in M1 of left MCA with NIHSS and ASPECT score of 19 and 9. Thrombolysis followed by Mechanical Thrombectomy (MT) achieving a TIC13 score and improvement in NIHSS to 1. Twenty-four hours post thrombolysis, CT head revealed a left basal ganglia infarct (2.5cm) with Hemorrhagic Transformation (HT1). Risk stratification was calculated using CHA2DS2-VASc and HAS-BLED criteria, with decision to anticoagulated 6 days post stroke.

CT SCAN on admission

CT SCAN post thrombolysis

Five days later, the patient suffered a right TACI, with an NIHSS of 17 and thrombus in M1 segment of the right MCA. As thrombolysis was contraindicated, MT was repeated and TIC13 flow achieved. NIHSS reduced to 5 with repeat CT confirming a 1.5cm infarct within the right lentiform nucleus. With high risk of further embolic episodes, split dose low molecular weight heparin was initiated to reduce the risk of further embolic stroke.

CT SCAN on re-admission

CT SCAN post second thrombolysis

Haemorrhagic transformation

6 week repeat CT demonstrating recovery.

Three days later, NIHSS deteriorated to 19 and CT head confirmed Parenchymal Hemorrhage (PH1). Anticoagulation was stopped and six weeks rehabilitation followed, reducing NIHSS to 4 and MRS to 2. With resolution of the Haemorrhage, oral anticoagulation with Apixaban was resumed. Three months follow up showed NIHSS and MRS of 1.

DISUSSION AND CONCLUSION

The timing of oral anticoagulation following stroke is always difficult, but this case highlights the unpredictable nature of stroke especially in patients with AF. Primary prevention of stroke in these patients is crucial as this can aid in the decline of mortality and morbidity from stroke which can be extremely complexed, as this case highlights. Moreover, thrombectomy is able to be performed in both instances with positive outcome. Application of the guidelines to take decisions in thromboprophylaxis fundamental for clinical benefit and net reduction in mortality. But, although there are risk stratification systems in place, there is a need to assess each patient on an individualistic basis prior to forming a decision. The guidelines must be used alongside clinician experience and the evaluation of the patient's condition including pre-stroke morbidity. This allows evaluation of patients on a case specific nature, aiming to reduce risk of recurrence and improve overall quality of life.

REFERENCES

1. López-López José A, Sterne Jonathan A C, Thom Howard H Z, Higgins Julian P T, Hingorani Aroon D, Okoli George N et al. Oral anticoagulants for prevention of stroke in atrial fibrillation: systematic review, network meta-analysis, and cost effectiveness analysis BMJ 2017; 359 :j5058
2. Hart RG Secondary Prevention of Stroke in Patients with Atrial Fibrillation Practical Neurology 2003;3:260-267.
3. Heeringa, J., van der Kuip, D., Hofman, A., Kors, J., van Herpen, G., Stricker, B., Stijnen, T., Lip, G. and Witteman, J. (2018). Prevalence, incidence and lifetime risk of atrial fibrillation: the Rotterdam study.
4. Von Kummer R, Holle R, Rosin L, Forsting M, Hacke W. Does arterial recanalisation improve outcome in carotid territory stroke? Stroke 1995; 26:581-587.
5. Åsberg S, Hijazi Z, Norrving B, Terént A, Öhagen P, Oldgren J. Timing of oral anticoagulant therapy in acute ischemic stroke with atrial fibrillation: study protocol for a registry-based randomised controlled trial. Trials. 2017;18:581.