

Protocol Of Neurological Indications To Percutaneous Left Atrial Appendage Closure For Stroke Prevention In Atrial Fibrillation

M Masato, C F Salimbeni, S Saccà, M Michieletto, B Reimers, D D'Este, A Bruscagnin, C Bruscagnin

Citation

M Masato, C F Salimbeni, S Saccà, M Michieletto, B Reimers, D D'Este, A Bruscagnin, C Bruscagnin. *Protocol Of Neurological Indications To Percutaneous Left Atrial Appendage Closure For Stroke Prevention In Atrial Fibrillation*. The Internet Journal of Neurology. 2016 Volume 19 Number 1.

DOI: [10.5580/IJN.32959](https://doi.org/10.5580/IJN.32959)

Abstract

Atrial fibrillation is a frequent cardiac arrhythmia. The prevalence is 2-2,7% in middle aged population; it increases with ageing and approaches 8% in elderly people. There is high cardioembolic risk related to atrial fibrillation: about 20% of strokes are caused by this common arrhythmia. The aim of this study is to identify patients with selective clinical features to address to left atrial appendage closure.

INTRODUCTION

Atrial fibrillation is a frequent cardiac arrhythmia. The prevalence is 2-2,7% in middle aged population; it increases with ageing and approaches 8% in elderly people. There is high cardioembolic risk related to atrial fibrillation: about 20% of strokes are caused by this common arrhythmia.

Oral anticoagulation remains the mainstream therapy for ischemic stroke prevention in patients with atrial fibrillation and warfarin therapy is considered the first choice, since it reduces about 60% of strokes. However the anticoagulant therapy has many limitations, such as food interactions, and relative/absolute contraindications due to haemorrhagic complications. Patients often discontinue warfarin for a variety of reasons and chronic warfarin administration rates remains indeed suboptimal. Although the compliance with anticoagulation may improve with new anticoagulants and the bleeding risk can be reduced compared with that of warfarin, there is still a progressive increase in bleeding complications over time.

The Authors identified some neurological situations at risk for haemorrhagic complications and divided relative haemorrhagic risk from absolute haemorrhagic risk. International Guidelines have been used in this study. The aim of this study is to identify patients with selective clinical

features to address to left atrial appendage closure.

MATERIALS AND METHODS

The Departments of Neurology and Cardiology of Mirano-Venice Hospital cooperated to analyze neurological patients with Ischemic and Haemorrhagic Strokes and identified in high haemorrhagic risk categories with contraindication to anticoagulant therapy.

CHA2DS2Vasc score was used to identified ischemic risk, HAS-BLED score was used to identified haemorrhagic risk, but also other clinical characteristics were considered as haemorrhagic risk as HAS-BLED.

Neuroimaging was the main source, since it can identify site and extension of haemorrhagic lesions, presence of microbleeding and leukoaraiosis.

The Authors also adopted these International Guidelines: Italian Stroke Guidelines (SPREAD 2012), ESC 2012, AHA-ASA 2014, AHA/ACC/HRS 2014, EHRA/EAPCI expert consensus statement on catheter-based left atrial appendage occlusion, AHA-ASA Guidelines 2014.

It was assessed if there is major indication to left atrial appendage between ischemic patients or haemorrhagic patients, keeping in mind that obviously haemorrhagic risk

for ischemic stroke is a systemic risk (internal medicine diseases).

The neurological protocol

a) Evaluation of contraindications for prolonged use of oral anticoagulants (vitamin K antagonist -VKA and new oral anticoagulant -NOA) that we have divided in:

1) ABSOLUTE:

- atypical cerebral seat haemorrhagia (lobar): amiloidotic angiopathy, vascular malformations and lesional haemorrhagic cerebral diseases.

- relapse of haemorrhagic cerebral event

2) RELATIVE:

- typical cerebral seat cerebral haemorrhagia (deep)

- systemic internal medicine diseases with haemorrhagic risk

b) Esclusion of other thrombo-embolic causes using Sovra-aortic Eco_Doppler sonography and Echocardiography:

- Carotic plaques

- Aortic Arch plaques

- Cardiac Thrombosis

- Valvular pathology with thrombosis

c) Examination of Neuroimaging (CT e MRI performed with gradient-echo sequences too)

d) Haematochemical examinations (for thrombophilic and inflammatory predisposition):

INR, PT, aPTT, fibrinogen, ATIII

C protein, Resistance to Activated C protein, S protein

Antiphospholipids Ab, beta2 glicoprotein Ab

Homocysteine

Mutations in Factor II, Leiden's Factor V e MTHFR

ENA, ANA, ANCA, C3-C4, rheumatoid factor

e) Evaluation of limitations for use of new oral anticoagulants (NOA):

renal insufficiency-failure, hepatic insufficiency-failure, gastroenteric haemorrhagic risk, other haemorrhagic risks

due to medical problems, cancer with haemorrhagic risk, pharmacological interactions for continuative drug use (carbamazepine e phenytoin with dabigatran, atorvastatin with dabigatran, SSRI e SNRI with dabigatran, NSAIDs)

f) Evaluation of haemorrhagic risk that is not identifiable using HAS-BLED score:

triple therapy for presence of coronary stents, cancer with haemorrhagic risk, inflammatory bowel diseases (IBDs), compliance of the patients, risk of falls, absence of caregiver for old disabled patients.

g) Decision of the patients: always to be considered.

CLINICAL RECORDS in the period between 2012-2014

27 patients: 18 males, 9 females

Average age: 74 years old (from 54 to 85)

Pathology: Ischemic Stroke: 10, Haemorrhagic Stroke: 10, Other conditions: 7

Typical cerebral haemorrhagia: 4, Atypical cerebral haemorrhagia: 2, Subdural haemorrhagia: 3, Spinal haemorrhagia: 1, AIT: 3, Ischemic Stroke: 7, Other haemorrhagic risk: 7

CONCLUSIONS

It's necessary to have clear basis before addressing patients to LAA closure and Neuroimaging is very helpful and reliable for this purpose. It's highly recommended to evaluate limitations in use of NOACs. Patients are selected case to case.

Figure 1

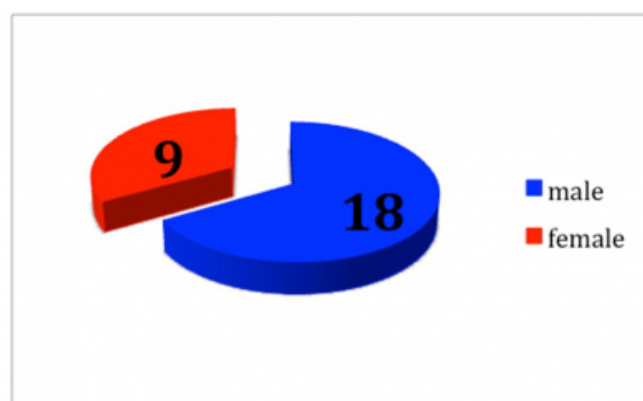


Figure 2

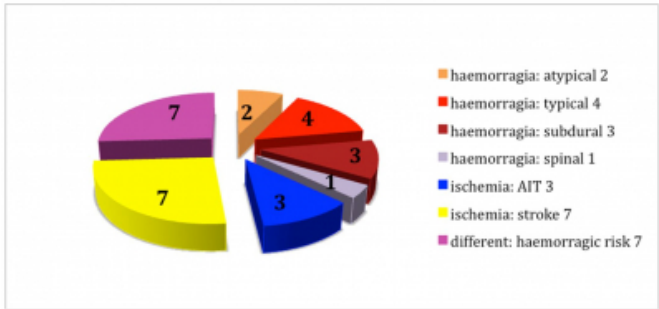


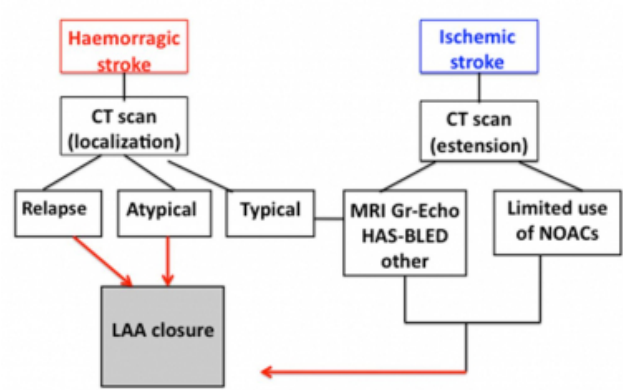
Chart 1

Chart Of Diagnostic Points

Evaluation of contraindication of prolonged use of oral anticoagulant (VKA or NOACs) due to high haemorrhagic risk
Exclusion of embolic causes different of atrial fibrillation using Ultrasound of supra-aortic vessels and Echocardiography
Evaluation of neuroimaging (CT scan and MRI) and research of microbleedings with MRI (gradient echo)
Blood tests for thrombophilic conditions
Identify clinical limitations of use of NOACs
Evaluation of haemorrhagic risk in conditions non included in HAS-BLED score
Decision of the patient

Chart 2

Flow Chart



References

1. T Contractor and A Khasnis Left atrial appendage closure in atrial fibrillation: a world without anticoagulation? Card Research and Practice 2011: 1-7 Art ID752808
2. A Faustino, L Paiva, R Providencia, R Cacao, M Costa, A Leitao-Marquez Percutaneous closure of the left atrial

appendage for thromboembolic prevention in atrial fibrillation. Rev Port Cardiol 2013 32(4): 311-323
3. JN Goldstein and SM Greenberg Should anticoagulation be resumed after intracerebral hemorrhage? Cleveland Clinic J Med 2010 77 (11):791-799
4. DR Holmes Left atrial appendage occlusion J Am Coll Cardiol 2014 63(4): 291-298
5. DR Holmes, VY Reddy, ZG Turi, SK Doshi, H Sievert, M Buchbinder, CM Mullin, P Sick Percutaneous closure of the left atrial appendage versus warfarin therapy for prevention of stroke in patients with atrial fibrillation: a randomised non-inferiority trial. Lancet 2009 374:534-42
6. DR Holmes and RS Schwartz Does left atrial appendage occlusion eliminate the need for warfarin? Controversies in Cardiovascular Medicine. Circulation 2009 10:1927-1932
7. U. Landmesser and DR Holmes Left atrial appendage closure: a percutaneous transcatheter approach for stroke prevention in atrial fibrillation. Eur Heart J 2012 33:698-704
8. T Lewalter, R Ibrahim, B Albers, AJ Camm An update and current expert opinions on percutaneous left atrial appendage occlusion for stroke prevention in atrial fibrillation . Europace 2013 15(5):652-656
9. GYH Lip, N Dagres, A Proclemer, J H Svendsen, L Pison and C Blomstrom-Lundqvist Left atrial appendage occlusion for stroke prevention in atrial fibrillation in Europe: results of the European Heart Rhythm Association survey Europace 2013 15: 141-143
10. S Mobius-Winkler, GC Schuler, PB Sick Interventional treatments for stroke prevention in atrial fibrillation with emphasis upon the WATCHMAN device. Current opinion in Neurology 2008; 21:64-69
11. PD Mudd and MA James Anticoagulation for atrial fibrillation: should warfarin be temporarily stopped or continued after acute cardioembolic stroke? Age and Ageing 2010 39: 670-673
12. VY Reddy, D Holmes, SK Doshi, P Neuzil, S Kar Safety of percutaneous left atrial appendage closure Circulation 2011 123: 417-424
13. VY Reddy, S Mobius-Winkler, MA Miller, P Neuzil, G Schuler, J Wiebe, P Sick, H Sievert Left atrial appendage closure with the Watchman Device in patients with a contraindication for Oral Anticoagulation The ASAP Study. J Am College Card 2013 61: 2551-6
14. R Whitlock, J Healey, J Vincent, K Brady, K Teoh, A Royse, P Shah, Y Guo, M Alings, RJ Folkeringa, D Paparella, A Colli, SR Meyer, J-F Legare, F Lamontagne, W Reents, A Boning, S Connolly Rationale and design of the Left Atrial Appendage Occlusion Study (LAAOS) III Ann Cardiothorac Surg 2014 3(1): 45-54
15. RP Whitlock, JS Healey, SJ Connolly Left atrial appendage occlusion does not eliminate the need for warfarin Circulation 2009 120: 1927-1932
16. Guidelines:
- Italian guidelines SPREAD 2012
- ESC 2012
- AHA-ASA 2014
- AHA/ACC/HRS 2014
- EHRA/EAPCI expert consensus statement on catheter-based left atrial appendage occlusion. B Meier, Y Blaauw, AA Khattab, T Lewalter, H Sievert, C Tondo, M Glikson Europace September 2014

Author Information

Maela Masato

Department of Neurology Mirano-Dolo (Ve)
Venice, Italy

Carlo Fattorello Salimbeni

Department of Neurology Mirano-Dolo (Ve)
Venice, Italy

Salvatore Saccà

Department of Cardiology Mirano (Ve)
Venice, Italy

Marco Michieletto

Department of Cardiology Mirano (Ve)
Venice, Italy

Bernhard Reimers

Department of Cardiology Mirano (Ve)
Venice, Italy

Daniele D'Este

Department of Cardiology Dolo (Ve)
Venice, Italy

Andrea Bruscagnin

Department of Radiology Mirano (Ve)
Venice, Italy

Chiara Bruscagnin

Venice, Italy