Article title:

Left Atrial appendage device occlusion. A case for Sudan and the rest of Africa.

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Introduction

Atrial Fibrillation(AF) is the most common sustained arrhythmia in man with incidence increasing with age. AF affects 1-1.5% of the population in developed world with a lifetime risk in men and women above the age of 40 of 1 in 4 [(1)].

AF is associated with significant risk of thrombolembolism with a 5-fold increased risk of stroke . Up to 20% of ischemic strokes occur in patients with atrial fibrillation and this risk increases with age [(2).] Furthermore, AF related stroke is more debilitating and it is the leading cause of longterm disability and third leading cause of death in AF patients.

The financial impact of such an event is also important especially in a limited resource setting. A chart review of stroke patients in Nigeria revealed that patients require an average of US$600 and $4,860 (direct costs only) in a government and a private hospital, respectively, to access care within the first 36 weeks post stroke [(3)]

Prevalence and etiology of AF in Sudan and Africa

Data on prevalence on of AF in the African continent and in Sudan are scarce and most data come from small hospital based studies. However, prevalence of AF in Africa seems to be lower than the rest of the world and in rural Sub-Saharan Africa appears to be quite low [(4)]

AF is expected to increase due to increase in urbanization and associated risk factors. It has been stipulated that the largest relative increase in cardiovascular disease burden between 1990 and 2010 in

Sub-Saharan Africa was in AF [5]. It is estimated that by 2050, the prevalence of AF in Africa will be greater than in any other region of the world [6] .

In the Rely AF registry which included several African countries including Sudan, 22% of the cases were rheumatic compared to 2% of the overall population. Despite having higher proportion of rheumatic AF, still majority is non-valvular AF [7].

Prevention of thromboembolism in AF

The gold standard for prevention of thromboembolism is anticoagulation whether using warfarin or the novel anticoagulants (NOAC).

Warfarin

Warfarin has been shown in several randomized control trials to reduce incidence of stroke in AF patients by more than 80%[8][9] .

However, warfarin is not prescribed in real life to many patients who are eligible.

In the Euro Heart survey 67% of eligible patients received warfarin [10]. Other studies showed lower warfarin usage in eligible patients [11] .

Furthermore, discontinuation rates for warfarin is high over time [12] . Several small scale studies from the African continent showed variable rates of warfarin use; Zimbabwe (19-% - 38%) [13] , Cameroon 34% [14] South Africa (75%) [15] , South Africa/ Heart of Sweto Study (33%) [16] , Kenya (80%) [17] .

Novel Anticoagulants

The novel anticoagulants either factor Xa or antithrombin antagonists have shown superiority over warfarin in stroke and thromboembolism prevention and all cause mortality [18] . And despite the fact that they

have e lower bleeding rates than warfarin , the bleeding risk is till significant with similar discontinuation rates as warfarin [19] .

LAA occluder devices

LAA occlusion using devices offers an anatomic and local method for prevention of thromboembolism since 90% of thromboembolism in non-valvular AF originates from the LAA [20]. It has been described in about 64% of patients with rheumatic AF.[21]

The procedure wasfirst performed in 2001 using the PLAATO device (Medtronic) and currently there are a number of devices available, The only device to have the FDA approval is the Watchman device (Boston Scientific) and it is the device with largest set of data and prospective follow-up.

Long term follow up data of the Watchman device from the PREVAIL trial showed better efficacy outcomes including reduced overall mortality compared to warfarin with similar adverse events[22] . Procedure related adverse events are also decreasing steadily as operator and center experience increases [23] .

A case of LAA occluder devices for Sudan and Africa

The author believes there is a need for LAA occlude as there is need for the rest of the world. The cost of the procedure and lack of expertise remain the two main impediments to wide use of these devices at this time.

However, with more devices acquiring CE mark and becoming available in the future with increased worldwide experience with the device, this might be a viable option in Sudan and other parts of Africa.

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