# Traumatic events involving elderly patients treated with anticoagulants for atrial fibrillation: the downside of stroke prevention

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## Abstract

A group of oral anticoagulant-treated patients affected by permanent atrial fibrillation was evaluated after their access to the emergency room as a result of a traumatic accident. In these patients, the re-evaluation of their risk of thromboembolism and bleeding was performed together with the evaluation of their risk of falling and institutionalization. Results show that the emergency department identifies a cohort of very elderly frail patients, who should be carefully reconsidered for anticoagulant therapy after a traumatic event.

## Introduction

In our emergency department (ED) we often observe anticoagulated patients who are taken to the hospital after accidental trauma. They are usually oral anticoagulant (OAC) elderly patients affected by atrial fibrillation, and it is not uncommon that emergency physicians at the time of their clinical assessment wonder how it was possible to give an oral anticoagulant to such compromised patients. To better investigate such an impression, we decided to record all of them and recalculate their risk of bleeding or thrombosis on admission. In addition, in every patient we assessed the risk of falling and the risk of readmission to the hospital, according to the validated scores as an expression of their frailty.

## Materials and Methods

From January 1 to August 10, 2014, we performed a prospective study collecting all patients evaluated in our ED who were treated with OAC for permanent atrial fibrillation, and carried to the emergency room as a result of different trauma following accidental falls. We excluded anticoagulated patients with prosthetic valve hearth and pulmonary embolism or injured in road accidents or accidents due to other responsibilities. When they were first seen by a physician of the Emergency Department, their medical histories were supplemented by the evaluation of the risk of falling, according to the Morse and the Conley Fall scales.[1,2] These two scales were chosen because of their reliability and the short time required for the score

collection. Then the assessments of the thromboembolic and bleeding risks were respectively calculated according to the CHA2DS2-VASc and HAS-BLED scores cited in the Guidelines for atrial fibrillation.[3] Finally all patients were also screened according to the identification of senior at risk (ISAR) tool[4] that was developed to identify seniors in an ED setting at high risk of subsequent functional decline, institutionalization or death. Obviously the final diagnosis subsequent to trauma was also recorded. All patients were asked for their consent to data collection as supplement to their medical history and the medical director of the hospital authorized the study.

## Results

From January 1 to August 10, 2014, we collected 97 patients of both sexes (49 females, 48 males). The mean age was 83.3 years (83.1 for men and 83.5 for women; range 74-92). 70.1% and 58.7% of all patients resulted to be at high risk of falling, according respectively to the Conley and Morse Fall Scales. The first involves a high risk of falling for scores greater than or equal to 2, while the second also provided a range of low and medium risk that covered respectively 10.3 and 30.9% of our cases. All patients had a CHA2DS2-VASc score ≥2 and so the OAC resulted appropriate for the 100% of them. However, almost the half of them (45 cases) showed a significant bleeding risk, reaching a HAS-BLED score ≥3. The ISAR tool identified 81 patients (83.5%) at risk of adverse health outcomes and further short-term hospitalization. Head injury was the more frequent diagnosis recorded, involving 76 patients (78.3%). Eleven of them (11.3% of all patients) reported an intracranial hemorrhage, while the others had minor head injuries with (12 patients) or without a scalp laceration. Any patients with intracranial hemorrhage was treated with vitamin k and with coagulation factor II, IX and X for reversal of anticoagulation. In the other cases the oral anticoagulant was temporarily discontinued and the patients were receiving prophylactic doses of low weight molecular heparin. Other relevant consequences of trauma were fractures of femur and/or pelvis (16 patients-16.4%), upper limbs (10 patients-10.3%), nose or facial bones (9 patients), rib fractures (7 patients) and multiple bruises (10 patients). Two patients reported an amielic fracture of a lumbar vertebra. In our follow-up that was extended only up to 30 days from the admission, we recorded three deaths, two in patients with intracranial hemorrhage, and one due to pulmonary embolism in hip fracture. In about 10% of cases (9 patients) the INR value was higher than the therapeutic range and among these there was one case of intracranial bleeding but no deaths within a month. In 20 patients (20.6%) the INR was below the therapeutic range.

## Discussion

Our study should not be intended as a heavy criticism to the prescription of OACs, but it simply wants to provide a different point of view by highlighting the downside of this phenomenon. Cardiologists, internists, geriatrics and neurologists are the specialists who usually prescribe OACs for the prevention of thromboembolic events in atrial fibrillation according to the current evidence, while only the emergency physician is the one who deals with the possible severe complications. After the OAC prescription by the specialist, theoretically the primary care physician should monitor the patient's risk factors and the opportunity of continuing OAC therapy. However, this will not be the case in several instances. As reported by Kellerman and Martinez[5] the emergency room is a sort of *room with a view* on several aspects of the

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healthcare system, and this is the case of accidental traumatic events in anticoagulated patients. The cohort of anticoagulated patients for atrial fibrillation, observed after a traumatic accident, has a significant incidence of complications and really seems to be a population at risk. The first observation is that our series is made up of very old patients, and this is their intrinsic frailty. The ISAR score,[4] which was significant in 83.5% of cases, confirmed that this is a particularly vulnerable population. Moreover, a percentage of almost 30% of them had an INR value not suitable for a therapeutic range. Furthermore, the risk of falling in our series was particularly high (around the 60% and more) according with two reliable fall scales[1,2] and the diagnosed complications of accidental traumatic events in these OAC patients do not seem to be negligible. The incidence of intracranial complication after a head injury in our group was markedly high. Moreover, not only the risk of intracranial hemorrhage should be considered: fractures of hip, femur and pelvis, hemothorax and/or pneumothorax secondary to rib fractures could have more serious consequences in OAC patients, even death.

In recent years the use of oral anticoagulants has significantly increased after the introduction of the CHA2DS 2-VASc score[6] that identifies more patients at risk of stroke for atrial fibrillation than in the past,[7] adding three further risk factors: age, female gender and vascular diseases. As confirmed by the update of the ESC guidelines[3] the CHA2DS 2-VASc score has been validated in cohort studies involving many patients. The guidelines recommend clinicians to identify patients who need oral anticoagulation using the CHA2DS 2-VASCc score, but also measuring the HAS BLED score of each patient.[8] The latter advises caution for score ≥3, but in itself it does not mean giving up the anticoagulant therapy. It gives information on the bleeding risk and suggests to monitor and/or modify those risk factors considered reversible.[3]

Among the various predictors of bleeding risk, the Has Bled score is now the most valuable.[9,10] However, probably, for a number of reasons, it is not yet sufficiently well defined to be (considered) the best among the mediocre.[11,12] Our data suggest that the re-evaluation of hemorrhagic and thrombotic risk in these patients should be a precise role of the emergency physician. In our patients the percentage of those with Has-Bled≥3 was quite high at the time of the traumatic event, but nevertheless they were anticoagulated. Donzè *et al.*[11] observed that in unselected patients the scores have little power to predict the risk of major bleeding and do not seem superior to the physicians' subjective evaluation; others authors[9] report that diabetes and heart failure are potential risk factors for bleeding, but are not included in the HAS-Bled. White[13] comments that the risk of bleeding is dynamic and associated with multiple factors that often cannot be measured as intercurrent diseases, INR control, trauma and falls. Actually the risk of falling and related situations such as abnormal gait and sight, mental deterioration are not included in the HAS-BLED score. Falls are not currently considered a contraindication to OAC[14,15] because the risk of stroke is generally considered too high.[16] However, so far the risk of falls has been evaluated in non-prospective studies.[14] This notwithstanding, the study of Man-Son[15] who states that person taking OAC must fall about 299 times in one year for warfarin to not to be the optimal therapy, we must consider that in studies prior CHADS and CHA2DS2-VASc diffusion[6,7] patients receiving OAC were much more selected.

## Conclusions

Modern studies are probably necessary to evaluate the real risk of falling in current anticoagulated population, which is much less selected and much older than in the past. We believe that after an access to the emergency room for a traumatic event, it is mandatory that the emergency physician re-evaluates the opportunity whether or not the patient should continue the AOC. Probably the indication for the OAC should be the result of an interaction between the scores of thromboembolic/hemorrhagic risk and the clinical judgment. The latter, especially in the very elderly, must be complemented by the assessment of the risk of falling and the general frailty of the patient.

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