Anticoagulation In the Octogenarian With Atrial Fibrillation

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BI, an 82 year old woman, presents to the hospital with a mixed expressive and conductive aphasia after waking up. She has a history of well controlled Type II diabetes mellitus, hypertension, hypercholesterolemia, chronic stable angina, osteoarthritis, osteoporosis, and a recently repaired hip fracture. Medications included metformin, lisinopril, atorvastatin, aspirin, ibuprofen, calcium and Vitamin D supplements, and alendronate. An MRI of her brain showed multiple, small infarcts suggestive of embolic disease in the left middle cerebral artery territory consistent with her aphasia, and MRA of her neck showed minimal carotid and posterior circulation atherosclerotic disease. Review of telemetry revealed multiple bouts of **atrial fibrillation (AF)** with ventricular rate in the 100s, with spontaneous conversion to sinus rhythm. Echocardiogram showed a low-normal ejection fraction, with no focal wall-motion abnormalities, nor obvious sources of thrombus or vegetation. She was managed conservatively with aspirin, a statin, blood pressure control, and the question of anticoagulation with warfarin was addressed on discharge, given her diagnosis of paroxysmal AF.

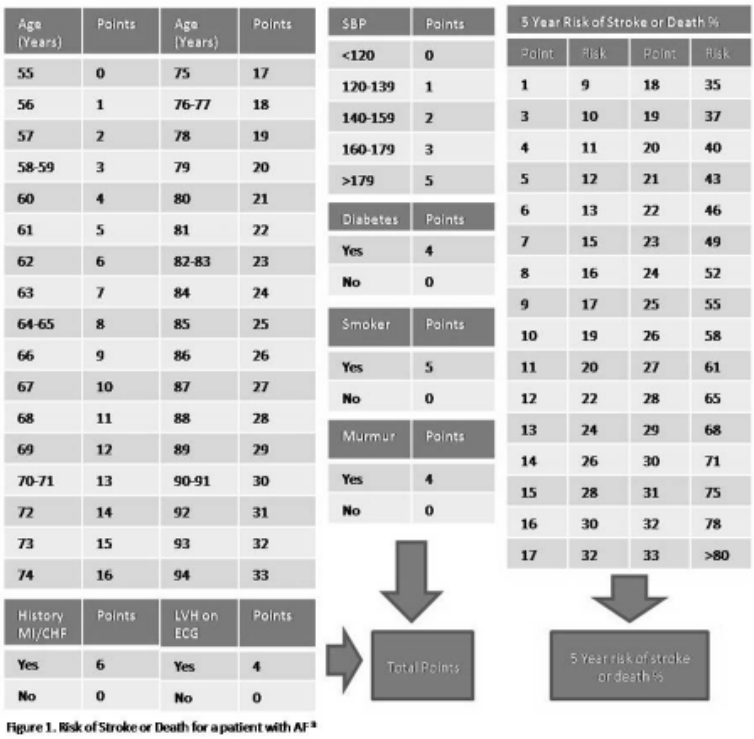
Risks of Atrial Fibrillation without Anticoagulation

The annual rate of ischemic stroke in patients aged 75 and older with AF and at least one other risk factor (previous stroke, diabetes, hypertension, or heart failure) who are not on warfarin can be as high as 8.1% .[1] The decision to anticoagulate older adults with AF with warfarin is encountered in inpatient and outpatient settings. AF is the most common dysrhythmia in the older patient, with 75 years the mean age of AF patients. The prevalence of AF in this population is expected to increase significantly.[2] At present, 15% of all strokes occur in individuals with AF, resulting in 25% 30-day mortality and significantly more morbidity than in non-cardioembolic strokes[2] Warfarin is highly effective in primary and secondary prevention of ischemic stroke, with a relative risk reduction of 62% when compared to placebo. [3] Warfarin is also known to lead to a reduction in devastating outcomes when ischemic strokes do occur in patientswith AF.[4]

Nevertheless, warfarin remains underutilized, especially in patients older than age 80, due primarily to fears of bleeding.[5] In addition, the alternatives to warfarin, such as low molecular weight heparin, aspirin, and clopidogrel, can be expensive, and their additional benefits compared to warfarin remain to be proven.[2]

Risks of Anticoagulation with Warfarin in Older Persons

Pooled data from the primary stroke prevention trials showed the annual rate of major hemorrhage (intracranial and extracranial) among AF patients treated with warfarin was 2.3%. The annual rate of intracranial hemorrhage, specifically (a more clinically important end-point given the greater morbidity and mortality), was 0.3%.[6,7] Meta-analysis of six randomized controlled trials showed warfarin to be associated with an absolute risk increase for intracranial hemorrhage of *only* 0.2% per year, when compared with placebo.[3] Despite the data elaborating the proven benefit of warfarin with the relatively low rate of hemorrhage, concerns abound regarding the generalizability of such results, especially in elder patients, for whom advanced age confers an independent risk factor for major bleeding on warfarin.[2] This lack of generalizability stems from a paucity of participants over 80 years old in primary prevention trials, placebo controlled studies and observational studies. Additionally, there is a selection bias in the literature as only patients who were initially deemed suitable candidates for long term warfarin therapy were included in the published studies, and major bleeding events from the early phase of warfarin therapy (where the risk of bleeding is the greatest) were often excluded. [2] Thus, these data may underestimate the risk of bleeding in elderly patients on warfarin.



Age (Years)	Points	Age (Years)	Points
55	0	75	17
56	1	76-77	18
57	2	78	19
58-59	3	79	20
60	4	80	21
61	5	81	22
62	6	82-83	23
63	7	84	24
64-65	8	85	25
66	9	86	26
67	10	87	27
68	11	88	28
69	12	89	29
70-71	13	90-91	30
72	14	92	31
73	15	93	32
74	16	94	33

History MI/CHF	Points	LVH on ECG	Points
Yes	6	Yes	4
No	0	No	0

SBP	Points
<120	0
120-139	1
140-159	2
160-179	3
>179	5

Diabetes	Points
Yes	4
No	0

Smoker	Points
Yes	5
No	0

Murmur	Points
Yes	4
No	0

5 Year Risk of Stroke or Death %			
Point	Risk	Point	Risk
1	9	18	35
3	10	19	37
4	11	20	40
5	12	21	43
6	13	22	46
7	15	23	49
8	16	24	52
9	17	25	55
10	19	26	58
11	20	27	61
12	22	28	65
13	24	29	68
14	26	30	71
15	28	31	75
16	30	32	78
17	32	33	>80

Figure 1. Risk of Stroke or Death for a patient with AF [8]

Condition	Points
CHF (C)	1
HTN (H)	1
Age (A) > 75 Yrs	1
DM (D)	1
Stroke (S)/TIA	2

CHADS2 Score	1 Year Stroke Risk (%)
0	1.9
1	2.8
2	4.0
3	5.9
4	8.5
5	12.5
6	18.2

Figure 2. CHADS2 Score.[11]

Ultimately, more evidence is needed to reconcile the risks and benefits of warfarin in patients over 80 years old, and the choice to anticoagulate these patients requires careful assessment of risk factors and circumstances for each patient. Such factors include baseline risk for stroke, inherent risk of bleeding, fall risk, and personal preferences regarding warfarin and the associated frequent blood monitoring required. [2]

Models to Predict Risk of Stroke with AF

Many models, derived from different populations, are available to guide clinicians in assessing baseline risk for stroke. Advancing age, history of prior stroke/transient ischemic attack, hypertension, heart failure, diabetes, and female sex are consistently mentioned in these models; e.g., one developed from the Framingham Heart Study http://www.framinghamheartstudy.org/risk/death.html[8] and the CHADS2 scoring system. CHADS2 may be less accurate in estimating risk of stroke because it dichotomizes age and hypertension (i.e. age greater than 75 years or not, and hypertensive or not hypertensive) and fails to consider smoking, LVH, and presence of heart murmurs. The Framingham tool, in contrast, accounts for these factors and attributes different point totals for ages and systolic blood pressures.[2] These tools, though commonly used in clinical settings and generally viewed as accurate in predicting risk for ischemic stroke, notably fail to take into account risk of bleeding, a significant concern in older adults in whom warfarin is being considered.

Models to Predict Risk of Bleeding with Warfarin

There have been attempts at developing models to assess bleeding risks in elderly patients on warfarin anticoagulation for their AF. In 2007, Wess et al attempted to combine assessment of stroke and bleeding risk in a decision support tool for determining which patients with AF ought to receive warfarin.[4] While their tool systematically evaluated for history of prior gastrointestinal bleeding, anemia, and renal insufficiency in addition to known risk factors for stroke, it omitted fall risk factors and prior intracranial hemorrhage. In addition, it did not include warfarin-associated extracranial hemorrhage, which actually occurs with greater frequency.[7] Finally, it did not address warfarin use

Factors Associated with Increased Bleeding Risk in Warfarin Recipients	
Age > 70 years	Male gender
History of remote bleeding	Alcohol/drug abuse
Diabetes mellitus	Anemia
Antiplatelet Use	Fall Risk
NSAID/Acetaminophen use	Dietary changes
Infrequent INR monitoring	Medication changes

Figure 3. Factors Associated with Increased Bleeding Risk in Warfarin Recipients.[2,5]

in patients older than 80. Shireman et al. additionally identified that age greater than 70 years, female gender, remote bleeding, bleeding during most recent hospitalization, alcohol and drug abuse, diabetes, anemia, and antiplatelet use were significant predictors of major bleeding risk in patients receiving warfarin for AF.[5] However, despite knowledge about the multiple risk factors for ischemic stroke and intracerebral hemorrhage, no official guidelines or models account for both baseline stroke risk and bleeding risk conferred by warfarin in patients with AF.

Other Factors Guiding the Decision to Use Warfarin

Finally, patient preference, medical comorbidities, and ability to comply with frequent INR monitoring are important. Guidelines mandate an INR of 2.0 to 3.0 for stroke prevention in patients with AF. Numerous studies have documented increased risk of bleeding for INR values greater than 4 and increased risk of stroke causing disability or death with INR values less than 2. Furthermore, older patients warrant more vigilant INR testing, as they are more sensitive to changes in diet and medications, and are on more medications that can modify their INR. Changes in diet and antibiotic prescription should be done judiciously to maintain consistent levels of Vitamin K. A thorough review of a patient's medicines should take place to avoid potential interactions with warfarin. In particular, analgesics such as nonsteroidal antiinflammatories and acetaminophen, and antibiotics like quinolones should be used with caution as there have been reports of both drugs augmenting warfarin's anticoagulant effect. For patients who require aspirin, such as patients with coronary disease who could benefit from an antiplatelet agent, it has been suggested that doses less than 100 mg daily minimize risk of bleeding when taken concomitantly with warfarin.[9] Finally, while fall risk should not automatically disqualify a patient from treatment with warfarin, individual fall risk assessments should be done, and efforts should be made to minimize both extrinsic and intrinsic factors that may cause falls and subsequent hemorrhage on warfarin.[10]

Summary

BI's baseline annual risk of stroke was 12.5% by CHADS2 score; her 5-year stroke risk by the Framingham tool was 59%. Risk factors for bleeding included diabetes, aspirin use and ibuprofen use, and a moderate fall risk by physical therapy assessment due to her osteoarthritis and deconditioned state. Given her fall risk, she and her family decided against anticoagulation with warfarin. She was discharged to an acute rehabilitation facility on aspirin alone.

The decision to utilize warfarin for anticoagulation in the elderly patient with AF remains an art, involving judicious use of tools to evaluate baseline risk of stroke, careful evaluation for risk factors for bleeding, and diligent consideration of the patient, and his or her comorbidities, medications and ability to comply with treatment and monitoring.

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Letter to the Editor

To the Editor:

(Inspired by Dr. Joseph Friedman's, "Acronyms: What's In A Name?" in the February 2009 issue), I am submitting "Acronymic Adventures of an Octogenarian."

Having had to learn new terminology when I entered the New York University School of Medicine in 1942, I am now, 67 years later, able to express myself with symbolic brevity.

After symptoms of BPH for many years, I fortunately avoided episodes of UTI and have not had a C & R. I've gone about my ADL quite well. The Heberden's Nodes in my distal IPJs have not interfered with my IADL. Having had some annoying episodes of SVT, I was pleased to learn that my PMI was in the 5th ICS in the MCL, and my BP was normal. My ECG was normal, without BBB. I have never had JVD, PND, other signs of CHF, or PVD. My SVT never evolved into paroxysmal AF or AFL. My ECHO showed no signs of MI, MS, AI or AS. I signed out of the ER, AMA and AOR. I did have an elevated LDL and low HDL. I am taking a statin QD; those values are now WNL.

After cataract extractions OU, my post-op vision is better OS than OD; my EOMs are fine. After I had an unexplained brief episode of blurred lateral field vision in OD, my ophthalmologist assured me I was not having a CVA.

A few years ago I fell and injured my right knee. An MRI showed a slight tear in my MCL and a normal ACL. With rest and PT, I recovered fully.

A reluctant dental patient since childhood, I have had many BWXs while struggling, without success, to retain most of my teeth. I have had better luck after my annual winter attacks of acute bronchitis, which never deteriorated into BOOP and have not left me, a cigarette smoker from ages 15-26, with COPD.

As the son of an otorhinolaryngologist, I have had no serious ENT problems, except for one episode of BPPV, which resolved spontaneously. My lifelong allergies have resulted in annual episodes of SAR, particularly when June grasses and August ragweed are in bloom.

In 1946, as commanding officer of the medical detachment of the 27th Infantry Regiment in Occupied Japan, one of my major missions was mosquito control. I dispatched teams of NCOs and enlisted men with DDT equipment to designated areas. At that time, DEET was not available for cutaneous prophylaxis.

A few years ago I had an episode of bilateral low back pain. Xrays of my hips and lumbo-sacral spine showed no evidence of DISH, but I had extensive DJD, surely now worse though I remain free of pain or disability (another unexplained medical mystery).

I hope to join both the Nonagenarian and Centenarian Clubs in the near and distant future. By then, Acronyms won't matter.

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