Ischemic Stroke and TIA in Nonvalvular Atrial Fibrillation- Assessment by Cardiovascular Imaging

ASEUniversity Correct Answer Guide

Case scenario 1:
A 60 year-old man presents with palpitations for 2 weeks. He denies dyspnea. He has long-standing hypertension treated with metoprolol succinate 100 mg qd but no other prior medical illnesses. Physical examination shows an irregular heart rate but is otherwise unremarkable. Electrocardiogram shows atrial fibrillation with a heart rate of 80 bpm. Transthoracic echocardiography shows a left ventricular ejection fraction of 65%, left atrial enlargement with a left atrial volume index of 35 ml/M^2 and a possible left atrial mass in proximity of the left atrial appendage. Transesophageal echocardiography shows no left atrial thrombus, a prominent "warfarin" ridge, and diffuse severe spontaneous echocardiography contrast in the left atrium and left atrial appendage.

Case 1, 1: What is this patients CHA^2DS^2-VASc score?
(a) 0
(b) 1
(c) 2
(d) 5
(e) 7

Case 1, 2: What is the estimated risk of thromboembolism at 1 year on the basis of his CHA^2DS^2-VASc score?
(a) 0%
(b) 0.7%
(c) 1.9%
(d) 3.9%
(e) 10%

Case 1, 3: Which of the following is the most appropriate long-term antiplatelet and/or anticoagulation management in this patient?
(a) No antiplatelet or anticoagulation medications
(b) Aspirin 81 mg daily
(c) Clopidogrel 75mg daily
(d) Aspirin 81 mg + Clopidogrel 75mg daily
(e) Warfarin daily with goal INR 2.0-3.0

Case scenario 2:
A 65 year-old woman with persistent nonvalvular atrial fibrillation is being risk stratified for thromboembolism. She has a CHADS^2 score of 1. No anticoagulation is being planned. Transthoracic echocardiography shows a three-dimensional derived left ventricular ejection fraction (LVEF) of 50% and left atrial volume indexed to body surface area (LAVI) of 45 ml/M^2.
**Case 2, 4:** What is the sensitivity of this patient’s LVEF/LAVI ratio for presence of left atrial appendage thrombus?

a. 10 to 20%
b. 30-40%
c. 50-60%
d. 70-80%
e. 90-100%

**Case 2, 5:** Which of the following test would be most appropriate to further risk stratify this patient for thromboembolism?

a. Saline contrast transthoracic echocardiography
b. Transcranial Doppler ultrasound
c. Transesophageal echocardiography
d. Cardiac computed tomography
e. Cardiac magnetic resonance imaging

6: A 60 year-old woman has permanent nonvalvular atrial fibrillation and a CHA₂DS-VAS2 score of 4. Which of the following echocardiography findings predict the greatest risk for thromboembolism?

a. Peak left atrial appendage emptying velocity of 5 cm/sec
b. Left atrial volume index of 27 ml/M²
c. Prominent left atrial appendage pectinate muscles
d. Mitral regurgitant fraction of 25%
e. Left atrial peak + strain of 20%

7: A 70 year-old women with nonvalvular atrial fibrillation undergoes multiplane transesophageal echocardiography for detection of left atrial appendage (LAA) thrombus. Which of the following imaging techniques applied to the LAA will improve LAA thrombus detection?

a. Fundamental frequency
b. Microbubble contrast
c. Color tissue Doppler
d. Strain
e. Color flow Doppler

8: In patients with nonvalvular atrial fibrillation, which of the following features that may mimic a left atrial appendage (LAA) thrombus would be the most difficult for three-dimensional transesophageal echocardiography to exclude thrombus?

a. LAA pectinate muscles
b. Bilobe LAA
c. Multilobe LAA
d. Warfarin ridge
e. LAA reverberation artifact

9: In patients with nonvalvular atrial fibrillation, which of the following findings at time of TEE would be most predictive of a potentially persistent left atrial thrombus after therapeutic anticoagulation for 3 months?

a. 3 x 2 cm thrombus
b. Left atrial height 2.5 cm, width 3 cm, and length 3.3 cm
c. Thrombus echogenicity akin to myocardium
d. Left ventricular ejection fraction of 60%
e. Thrombus attached at the inferior left atrial wall

10. In patients with nonvalvular atrial fibrillation, what percentage of ischemic stroke is likely to occur as a result of left atrial thrombus?
   a. 15%
   b. 35%
   c. 55%
   d. 75%
   e. 95%