Srce i krvni sudovi 2019; 38(1): 21-57

Case report

Case report – regarding the 2018 European Heart Rhythm Association Practical Guide on the use of non-vitamin K antagonist oral anticoagulants in patients with atrial fibrillation

Obradovic S[1,2], Dzudovic B[1], Djuric I[1]

[1]Clinic for Cardiology and Emergency Internal Medicine, Military Medical Academy, Belgrade, [2]School of Medicine, University of Defense, Belgrade

Abstract A female 82-year old patient is presented with permanent atrial fibrillation on vitamin K antagonist, who developed traumatic subdural hematoma, which was treated with surgically drainage and who developed pulmonary embolism as a complication. Oral anticoagulant therapy was interrupted after intervention and did not returned, and as a consequence she developed pulmonary embolism (PE), after two months. At admission to our hospital she was decompensated, with high heart rate and relatively small thrombus burden in the pulmonary tree.

Since her CHA_2DS_2-VASc score was 4 and she had acute PE, she had two indications for oral anticoagulant therapy. On the other side, patient had 82 years, recent subdural hematoma, creatinine clearance 32 ml/min and low body mass index 17 kg/m^2. Treatment of PE was started with unfractionated heparin and continue with enoxaparin 40 mg sc twice daily. After seven days oral anticoagulation with apixaban 5 mg BID was applied as a drug with the best balance between thrombosis prevention and bleeding.

Conclusion. Complex clinical scenarios in patients with AF and PE are very often presented in the real-world praxis. The guidelines for the use of anticoagulant therapy in those patients are the base for the decision of the choice, dose and duration of anticoagulant therapy adjusted to patient characteristics.

Key words atrial fibrillation, anticoagulant therapy, guidelines, pulmonary embolism.

Case report

An eighty-two years old lady was presented to our hospital with the shortness of breath, chest discomfort and progressive fatigue.

Personal history revealed that she had permanent atrial fibrillation for several years and regularly used warfarin, bisoprolol and ramipril for a long time. She also suffered from chronic obstructive lung disease and use bronchodilators from time to time. Her time in therapeutic range was solid and she determined INR monthly. She had 6 out of 10 INR last measurements in the range of 2-3, two were slightly below 2.0 and 2 were slightly above the 3.0 value before the incident. She felt at her home three months ago and because of the strong headache and instability she was examined by the neurologist and in that occasion brain CT-scan was performed. Bilateral subdural haematoma was diagnosed and she was admitted to the neurosurgery ward for the drainage. Because her INR was 2.2, bilateral drainage was performed after two days. After a control CT-scan, she was discharged to home treatment at the 8-th hospital day. At discharge only ramipril and bisoprolol were prescribed in her discharge letter and advice to visit her cardiologist after one or two months. She was weak and the most of the time she was lying in her bed and rest. One month before admission she become febrile, productive cough developed with the pleural pain. She was admitted to Clinic for pulmonary diseases and pleuropneumonia was diagnosed with positive chest radiography and high C-reactive protein levels and leukocytosis. She was treated 10 days with combination of cephalosporin and aminoglycosides. She was slightly better with near normalization of CRP and leukocytes and she was discharged after 14 days of hospital stay. However, soon after coming home, she become again weak and progressive dyspnea developed.

At admission to our intensive care ward, patient was extremely dyspneic, arterial tension was 110/65 mmHg, heart beats were 127/min and Oxygen saturation was 90% at room air. However, in admission ECG except the tachycardia and biphasic T waves in precordial leads

Corresponding author: Slobodan Obradovic, e-mail: sloba.d.obradovic@gmail.com

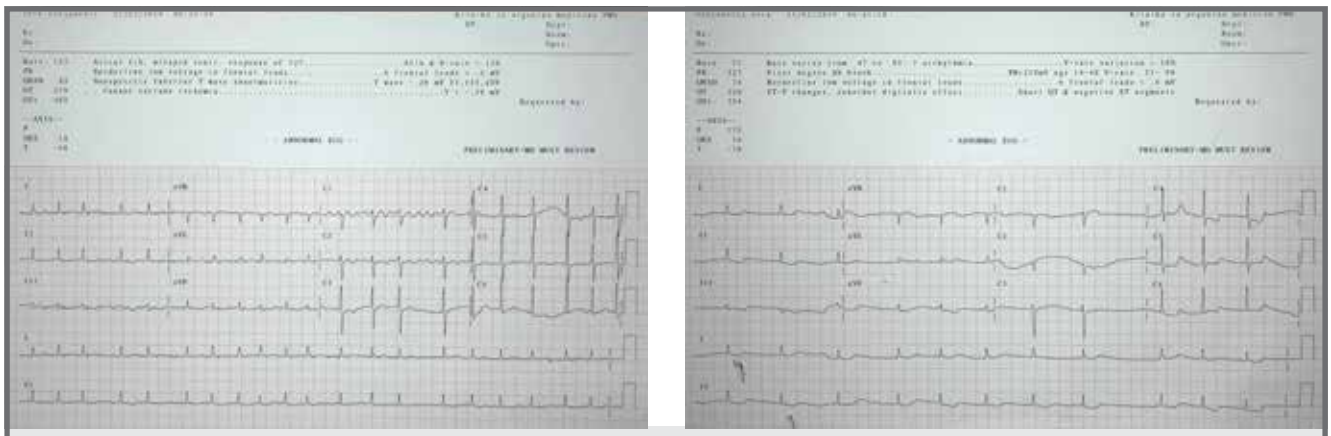

Figure 1A. ECG at admission

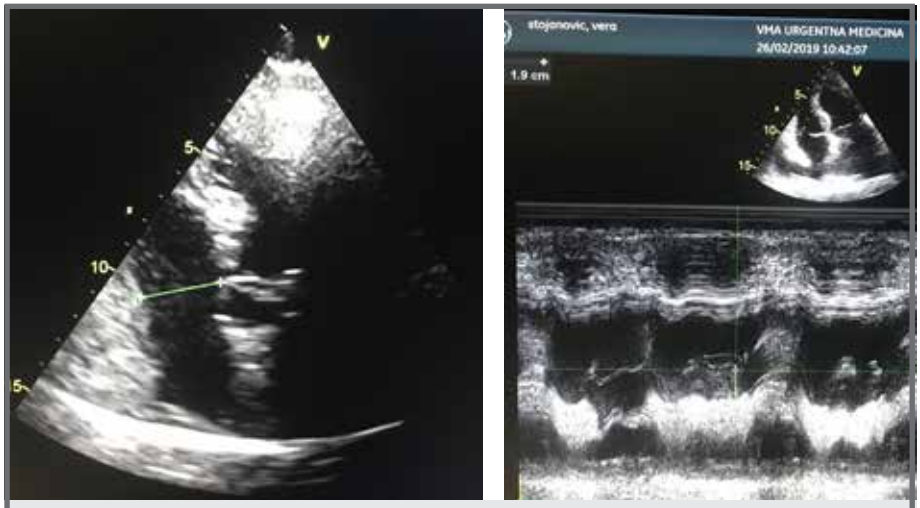

Figure 2A-C. Echocardiography finding at admission

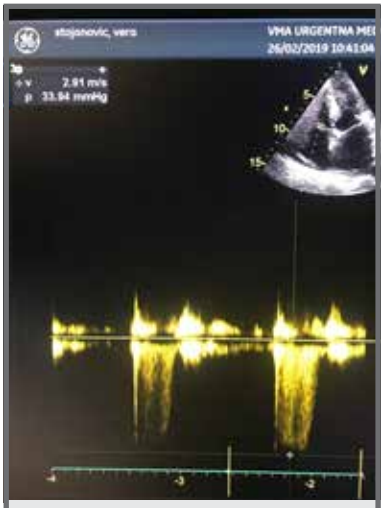

Figure 2B. ECG at discharge

there were no signs of right ventricle (RV) overload (Figure 1A). Indeed, ultrasound examination revealed increased diameter of RV 3.5 cm, with normal TAPSE 2.0 cm, hypertrophic free RV wall 1.0 cm and mild tricuspid regurgitation with systolic RV blood pressure around 40 mmHg (Figure 2A-C). Left ventricle systolic function was mildly decreased without regional wall motion abnormalities. She had elevated D-dimer level at admission 4.6 mg/L and creatinine serum level was 82 µmol/L (Cocroft-Gault estimated creatinine clearance was 32 ml/min). She had low body mass 45 kg and height was 165 cm. Under suspicious of pulmonary embolism, she went on multidetector CT pulmonary angiography. Non occlusive thrombus in the right pulmonary artery braches was detected without significant increase of RV diameter (Figure 3). Brain Natriuretic peptide levels was elevated 320 pg/ml. Cardiac troponin serum concentration was less than 0.01 ng/ml.

The treatment of patients with PE depends on the risk stratification based on hemodynamic parameters, RV dysfunction and levels of BNP and cTn. The patient had some features of intermediate-high risk PE, however there was a discrepancy between the CT-PA with a relatively small thrombus and heart ultrasound exam with mixture of some old and probably new features of RV dysfunction.

Infusion of unfractionated heparin was introduced with frequent measurement of APTT level. Amiodarone infusion and low-dose bisoprolol were started to control heart rate with very careful diuretic management was applied. Since the rate control was not achieved after 3 days, digitalis was added. Low-molecular weight 40 mg BID. sc was started at the fourth day of hospitalization with hemodynamic stabilization till the 7th hospital day. Before introducing oral anticoagulant therapy brain MDCT was performed. There were no signs of acute bleeding, only the presence of old bitemporal subdural hematoma was detected. After that, apixaban 5 mg BID was introduced for the next month when the first clinical control was planned. At the time of discharge, rate control was achieved (Figure 1B).

Patient did not have any complains during one-month follow-up and we decided to prolonged that dose for the next two months with the plan for the dose reduction afterwards.

Discussion

We presented a complex case with permanent atrial fibrillation in octogenarian female with low body mass and chronic renal failure who developed pulmonary embolism after traumatic subdural hematoma and interruption of anticoagulant therapy. European Heart Rhythm Association (EHRA) recommended continuation of anticoagulant therapy after one month of intracranial bleeding in patients who have indication

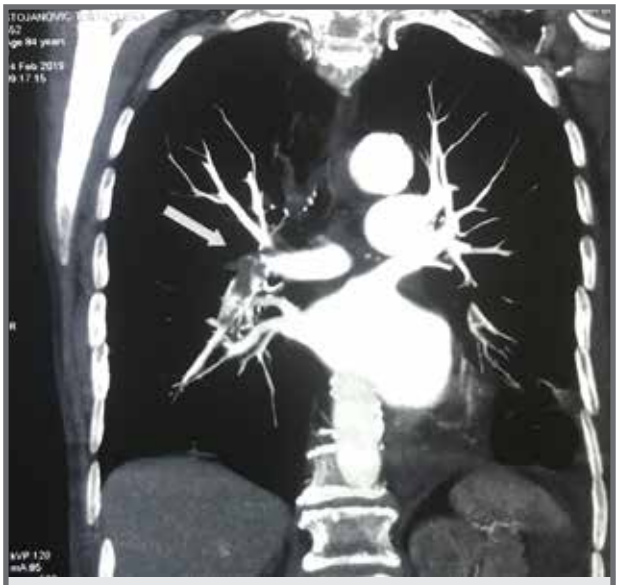

Figure 3. MDCT pulmonary angiography at admission

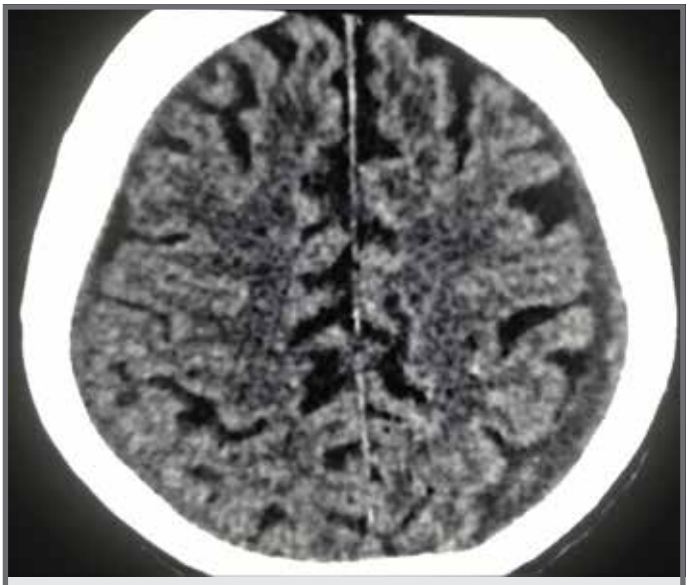

Figure 4. Brain MDCT before starting oral anticoagulant

for stroke prevention in atrial fibrillation. However, in the real world doctors hesitate or forget to continue anticoagulant therapy in this patient's group especially in elderly patients with some degree of renal failure. This situation is not rare, and further education of doctors is needed to ensure the adequate re-introduction of anticoagulant therapy in AF patients after intracranial bleeding. The second issue here is what kind of oral anticoagulant therapy should be applied and what is the ideal dose of prescribed anticoagulant. Patient was on Vit K antagonist with solid INR levels for a long time and she was used to that therapy, on the other side non vitamin K oral anticoagulant drugs are not reimbursed. The treatment of PE was also complex. It is difficult to assess mortality risk from PE in patient with left ventricle failure and chronic obstructive lung disease who has uncontrolled heart rate and permanent AF. Normal troponin, preserved TAPSE and relatively small thrombus burden on MDCT-PA determined our stratification to low-risk of dying from PE. The main reason for the use of heparins as a start of anticoagulation was led us by the fact that patient was not hemodynamically stable at the first days of hospitalization. After carefully assessment of thrombotic and hemorrhagic risk we choose apixaban for the oral anticoagulant. Since lower dose of apixaban did not study for patients with PE in spite the presence of two criteria for the use of lower dose (age above 80 y and body mass < 60 kg) we decided to start treatment of PE with 5 mg BID. Before the introduction of apixaban brain MDCT was done to exclude the recurrence of subdural hematoma since patient complained to headache during heparin treatment. An anticoagulant therapy after provoked PE with the major transient factor like surgery, should last at least 3 months. After that period, we planned to reduce the apixaban dose to 2.5 mg BID.

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