

A thrombotic snake in the thoracic aorta

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A 52-year-old woman was admitted to the surgery unit because of abdominal pain. She had a history of smoking (10 cigarettes/day), high blood pressure, and hypothyroidism. Her current drug regimen included L-thyroxine 100 µg/day, ramipril 10 mg/day, and atenolol 50 mg/day. Routine blood examination revealed the presence of anemia (Hb 8.3 g/dl, serum iron 10 µg/dl, ferritin 5.46 ng/ml), high ESR (49 mm) with normal PCR values (0.36 mg/dl) and coagulation tests, and negative occult fecal blood. Chest X-ray study revealed the presence of dilated aortic arch, and gastroscopic examination showed a hiatus hernia. Electrocardiogram and transthoracic echocardiography were normal, while transesophageal echocardiography disclosed a thrombotic formation (Fig. 1a, b) in the first tract of the descending aorta, which appeared as a “thrombotic snake” fluctuating in the lumen in the longitudinal projection (Fig. 1c–e). A CT scan confirmed the diagnosis of aortic thrombosis with an extension of about 7 cm. Lower limb echo-color Doppler revealed occlusion of the popliteal artery and collateral revascularization of the tibial arteries. Abdominal pain was interpreted as ischemic in origin due to celiac-mesenteric hypoperfusion

or embolus, but completely resolved within few days from admission. The patient underwent an extensive screening for pro-thrombotic states that did not reveal any significant abnormality (plasma omocistein 7.55 nmol/l, normal range 3.36–20.44; lupus anticoagulant negative; factor V mutation G1691A absent; factor II mutation G20210A absent; antithrombin III 111.5%, normal range 70–120%; protein C 112.5%, normal range 70–120%; protein S 105.7%, normal range 60–120%; activated protein C resistance 2.69%, normal values >2.00; anti-cardiolipin IgM 5.4, normal range 0.0–12.5; anti-cardiolipin IgG 9.9, normal range 0.0–15.0).

The patient had a cardiac surgery consultation, and was started on anticoagulation therapy. She was made aware of warning symptoms of peripheral or visceral emboli, and was recommended to seek immediately care at the Cardiovascular Department, if needed. She remained asymptomatic, and the thrombotic snake completely disappeared after 6 months of warfarin therapy. At the 6-month follow-up visit, hemoglobin levels were normal, and long-term anticoagulation was prescribed.

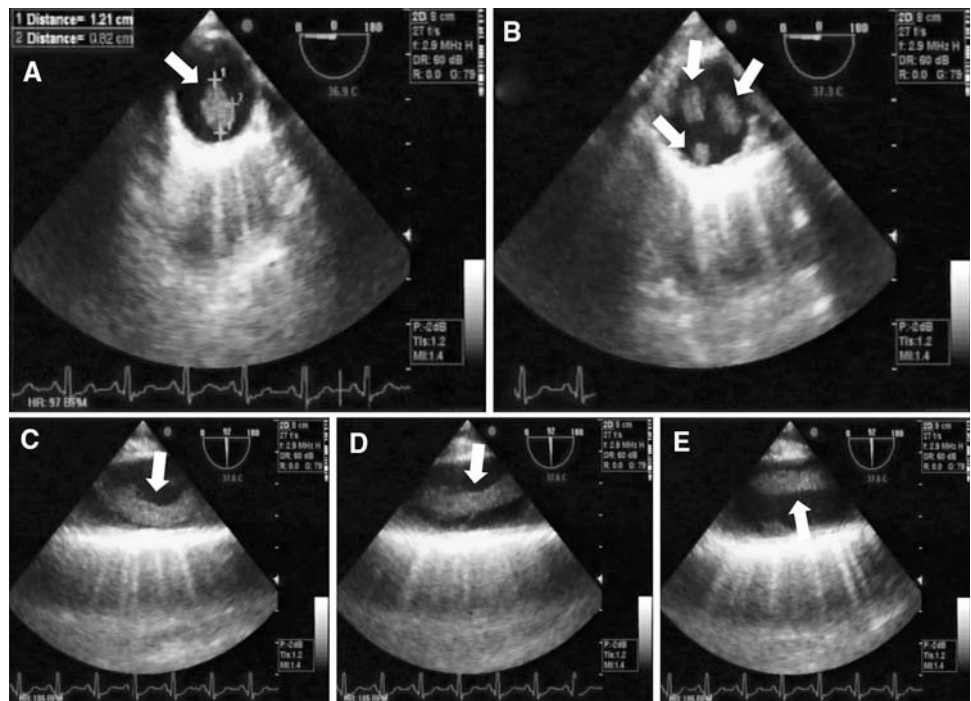
Thrombi may be observed in any aortic location, and their clinical presentation may vary widely with the localization. They are increasingly recognized in the last few years likely due to the widespread use of computed tomography, magnetic resonance imaging, and transesophageal echocardiography in diagnostic work-ups [1]. However, fluctuating aortic thrombi are distinctly rare [1, 2]. Young age, smoking and family history of atherosclerotic disease seem to represent the most important risk factors [3], but fluctuating thrombi have been observed also in patients older than 60 years [2]. They usually complicate an aortic pathology, such as aneurysm, atherosclerotic plaque, or dissection [1], or a hypercoagulable defect [4], but spontaneous thrombi arising from a normal or simply

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Fig. 1 Transesophageal echocardiography showing the presence of thrombotic formations (**a, b**) in the first tract of the descending aorta (*arrows*), which appeared as a “thrombotic snake” fluctuating in the lumen in the longitudinal projection (**c–e**, *arrows*)



mildly irregular aortic wall, have been also described previously [5].

Although there is as yet no therapeutic standard for this condition, both systemic anticoagulation and surgical procedures are valuable therapeutic options [1, 2, 6]. However, the former is considered as the first line option, due to the high morbidity and mortality of surgical thrombectomy, as well as the high incidence of recurrences [2, 6, 7]. Surgery, instead, is advisable in the event of failure or thrombus-related ischemic complications [2, 6]. Endovascular stent graft placement seems to represent a promising feasible, effective, and minimally invasive treatment alternative to open surgery procedures [7]. Whichever therapy is chosen, there is general consensus on the use of systemic anticoagulation to manage the long-term risk of thrombo-embolic complications or recurrence. Previously reported evidence, together with the rapid regression of abdominal pain, suggested a conservative medical approach in our patient.

Our case proves that aortic thrombosis can occur in the absence of a clearly identifiable hypercoagulable state, and that even a seemingly dreadful fluctuating aortic thrombus may resolve with anticoagulation, although its extent and mobility are consistent with a very high risk of embolic complications. The distinct paucity of information on natural history of this condition does not allow one to set the optimal duration of anticoagulation to prevent a new thrombosis. Based on general consensus, it seems sensible to recommend long-term anticoagulation to prevent a new lower limb or visceral arterial embolism.

Conflict of interest statement The authors declare that they have no conflict of interest related to the publication of this manuscript.

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