Giant right atrial thrombi treated with thrombolysis

Manuel Ruiz-Bailén MD PhD1, Carmen López-Caler MD2, Ana Castillo-Rivera MD3, Luis Rucabado-Aguilar MD1, José Ángel Ramos Cuadra MD4, Juan Lara Toral MD4, Cristobal Lozano Cabezas MD4, Juan Carlos Fernández Guerrero MD1

The present report describes giant atrial thrombi that were treated with thrombolysis in a community hospital. Two patients with giant atrial thrombi whose treatment involved complications are presented. Both patients developed cardiogenic shock and were treated unsuccessfully with thrombolysis. Because thrombolysis of giant thrombi may be ineffective, patients in this situation may require surgery.

Key words: Cardiogenic shock; Giant thrombi; Thrombolysis

Giant atrial thrombi are very uncommon. Although systemic thrombolysis may be suitable therapy for pulmonary thromboembolism or even free-floating emboli in the right atrium, its administration for giant thrombi may be ineffective or unsafe. We present two cases of giant thrombi with a fatal outcome after treatment with alteplase.

CASE PRESENTATIONS

Patient 1
Patient 1 had a history of essential arterial hypertension, ischemic lacunar stroke (August 2003) and an operation for a gastric ulcer in the 1970s. The patient was receiving treatment with acetylsalicylic acid and enalapril.

In August 2003, a final atioventricular synchronous pacemaker was implanted for a third-degree atrioventricular block. In November 2003, the patient presented with symptoms of asthenia, abdominal pain and edema in the lower limbs, and developed renal failure. Right ventricular failure was suspected; transthoracic ultrasound was normal. The patient presented with syncope and was admitted to the hospital’s intensive care unit, where transesophageal ultrasounds were performed. It revealed a floating, nearly totally occlusive thrombus in the inferior vena cava, as well as a mobile mass of approximately 6 cm × 6 cm (but without prolapse of the tricuspid valves). The mass appeared to occupy two-thirds of the right atrium and surrounded the electric catheter, suggesting a thrombus (Figure 1). Hypodynamia was detected in the right ventricle. A mobile mass of 1 cm × 2 cm, suggestive of an embolus, was observed in the right pulmonary artery. The patient’s outcome was poor, with respiratory and heart failure, and cardiac arrest. He was referred to the hospital for surgical assessment after undergoing systemic thrombolysis with alteplase (100 mg administered within 1 h for two days, for a total dose of 200 mg). Finally, because of the patient’s worsening status and cardiogenic shock, the decision was made to perform surgery, but the patient died during the operation. The pathology report confirmed the diagnosis of an organized thrombus.

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occupied the entire right atrium, causing inflow and outflow obstruction (Figure 2). The thrombus expanded toward both vena cavae. A chest computed tomography scan was performed, revealing the same findings as the transesophageal ultrasound, although pulmonary embolism was ruled out. The decision was for urgent transfer to a surgical hospital, but the patient remained in severe shock. In response to this situation, a decision was made to administer systemic thrombolysis with alteplase. This caused fragmentation of the thrombus and prolapse toward the tricuspid valve and the right ventricle, leading to the patient's death (Figures 3 and 4).

DISCUSSION

The presence of giant right atrial thrombi of sufficient size to cause inflow and outflow obstruction to the right cavities is anecdotal. Literature refers primarily to cases of venous catheter complications or congenital malformation (1-8). In these cases, the giant thrombi were found by an electrical catheter as an early postoperative complication of cardiac surgery.

One possible cause of cardiogenic syncope is pulmonary thromboembolism (PE). However, another possible cause is genesis of a giant thrombus in the right atrium. Both patients presented with symptoms of syncope, the former case quite likely associated with PE, because of the obstruction of right ventricular filling and emptying.

Thrombolytic treatment is an acceptable option for PE; moreover, it can even be considered in special situations, for example, cardiac arrest or localized right atrial emboli (9-11). The most effective therapy for patients with right-heart thromboemboli and PE remains unknown. Rose et al (12), in a retrospective review of 177 patients, detected the administration of systemic thrombolysis as an independent variable that protected against mortality. This benefit of thrombolysis may be attributed to its rapidity of administration and capacity to act in the smaller pulmonary vessels, which are inaccessible via surgery. Nevertheless, this study may present a bias, because the more serious patients were referred for surgery, and thrombolysis was reserved for less serious cases. Thrombolysis treatment concurrent with heart surgery (13-15) or even, in exceptional cases, without circulatory arrest (16), may be more effective, especially in cases of giant thrombosis in which the large size of the thrombus may prevent complete lysis. Despite the high mortality risk that may be associated with this technique (12) (probably because of the high rate of patient comorbidities, which is common among those presenting with PE), complete exeresis of the thrombus should be possible in the right cavities, with embolectomy of the pulmonary arteries. Fortunately, the low incidence of this complication makes it difficult to perform studies of the best therapeutic option.

Despite the small number of cases and case reports described, the safest option appears to be cardiac surgery.

We cannot reach a conclusion based on the cases described in the present report, although it is evident that systemic thrombolysis was not effective in either case.

REFERENCES


