Rare disease

Perforation of the left ventricle due to an abscess of a left ventricular thrombus: survival of the patient with a conservative medical therapy strategy

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Summary

A 73-year-old male was admitted due to sepsis with fever up to 40°C after haemorrhoidectomy. Blood cultures identified *Staphylococcus haemolyticus*. In 1986 he developed left ventricular aneurysm containing an apical thrombus after anterior wall myocardial infarction. In 1994 aorto-coronary bypass grafting was performed without thrombus removal. Echocardiography on admission showed a thrombus formation in the apical aneurysm. In the thrombus an inhomogeneous floating structure in terms of an abscess was identified. Later, a small perforation occurred at the border of the thrombus. Vancomycin and Tygacil were given for 20 days. Repeated echocardiographies showed a thrombus liquefaction and disaggregation after 12 days. Finally, a territorial haemopericardium with residual thrombus developed. Infection of a ventricular thrombus by septicaemia with myocardial wall infiltration by haemolysing *Staphylococcus* is rare but can result in spontaneous ventricle perforation. The patient survived and is after 18 months alive suffering from heart failure NYHA class II–III.

BACKGROUND

Ventricle thrombi in left ventricular aneurysmata after myocardial infarction are a known complication. When patients with left ventricular thrombi suffer from fever and sepsis an infection of the thrombus has to be excluded. The usual approach of thrombus removal is surgical repair but due to ageing patients with high perioperative mortality a conservative medical strategy has to be considered. Little is known about conservative antibiotic therapy and their complications in patients with infected left ventricular thrombi.

CASE PRESENTATION

A 73-year-old male was admitted to a primary care hospital with anal pain caused by haemorrhoids. He underwent surgical haemorrhoidectomy.

In his medical history, the patient had an ischaemic heart disease and an anterior wall myocardial infarction in 1986 resulting in a left anterior ventricular aneurysm containing a cardiac mural thrombus. In 1994 he underwent aorto-coronary bypass grafting without thrombus removal. Since then the patient did not report from angina pectoris and suffered from heart failure NYHA class II–III.

During the initial postoperative follow-up after haemorrhoidectomy no complications occurred. However, on day 1 after surgical intervention he presented undulating fever up to 40.1°C, increasing inflammatory parameters (white blood cells 17.200 Gpt/l, C reactive protein 375 mg/l) and chest pain especially during periods of rising fever. A proctitis after haemorrhoidectomy as the cause of fever was ruled out, clinically and by the CT scan. The patients had undulating fever with stable and haemodynamically unstable clinical findings. Physical examination revealed a pyknic person in reduced general condition and a normal

conscious state. Temperature was 39.0°C, blood pressure 110/70 mm Hg and pulse 65 beats/min. At the aortic area, a soft (1/6) systolic ejection murmur was heard. Further clinical state showed normal findings. The patient was initially treated with ceftriaxon and metronidazol intravenously. After 3 days of persisting fever antibiotic therapy was changed to meropenem in combination with gentamicin. Antibiotic therapy was stopped due to persistent fever and blood cultures isolated *Staphylococcus haemolyticus* in two blood tests. Then vancomycin and tygacil were given for 20 days. Suddenly the patient complained from an impaired vision and vagueness. Ophthalmological findings revealed a reduced vision of both eyes caused by an ischaemic retinopathy and by brain infarctions.

INVESTIGATIONS

Echocardiography: (A) Impaired left ventricular function with an ejection fraction of 35%. Apical thrombus formation in an anterior wall aneurysm. In the anterior wall thrombus a gelatinous area was visible. Small pericardial effusions were present around the left ventricle. (B) Seven days later, in the cap of the thrombus a small perforation was detectable leading to a flow going back and forth between the left ventricle and the thrombus. The diagnosis was a localised perforation of the thrombus and the ventricle into the pericardium. (C) Enlargement of perforation and liquefaction of the thrombus after 14 days. (D) Finally, complete localised perforation of the aneurysm with flow in the aneurysm and in the pericardium was visible after 20 days (figure 1).

Cardiac MRI on day 14

Hugh aneurysm with thrombus formation. Acinesia of the complete anterior wall with contrast media pooling in

Figure 1 Echocardiography showing the course of ventricle perforation. (A) Left ventricle with the apical mural thrombus in the aneurysm (apical 4 chamber view). (B) Color-Doppler echocardiography showing a small perforation of the thrombus. (C) Liquidation of the thrombus. (D) Huge perforation into the pericardium.

border zones of the thrombus. Myocardial perforation at the apical area of the myocardium into the pericardium.

Cranial MRI

Multiple embolic brain infarctions in the infratentorial, frontal and occipital brain areas.

Granulocyte scintigraphy

Inflammatory process in projection to the apex of the left ventricle.

DIFFERENTIAL DIAGNOSIS

- ▶ Infected left ventricular thrombus
- ▶ Endocarditis
- ▶ Proctitis after haemorrhoidectomy
- ▶ Multiple cardioembolic brain infarctions.

TREATMENT

Antibiotic treatment with ceftriaxon plus metronidazole was not successful, patient had still fever, antibiotic treatment with meropenem plus gentamycin was not successful, fever episodes were still present. Only treatment with vancomycin plus tigecyclin was able to relieve fever and reduced leucocytes and C reactive protein. After 20 days of combination therapy the patient recovered with the absence of any sign of inflammation. Visual limitations disappeared within 6 months.

OUTCOME AND FOLLOW-UP

After treatment with vancomycin and tigecyclin the patients had no longer episodes with fever. Signs of infection were absent. The patient was not anticoagulated because of the initial poor clinical status. After 18 months the patient is still alive and suffers from heart failure NYHA

class II–III. Due to the good actual condition he refuses to be set on warfarin.

DISCUSSION

Formation of a ventricle aneurysm after anterior myocardial infarction with thrombus formation is a known complication. However, the rate of infection of these thrombi resting in the aneurysm for years is unknown. Little is also known about the process of thrombus infection and the progress of this disease. When sepsis develops in such a patient not only endocarditis should be ruled out by transoesophageal echocardiography, but also for abscesses should be looked for. In this case an initial echocardiography could identify a thrombus with an abscess and MR-scan of the heart affirmed a liquidification in the thrombus. Echo follow-up investigations of the heart identified the abscess. Echo follow-up should be done weekly and in case of signs of cerebral thrombo-embolism.

Most of the published cases favour surgical repair with ventriculotomy and thrombectomy, but in this case with a EuroScore of 23% a surgical intervention was refused. In this situation medical therapy with antibiotics (according to antibiogram) is justified. Due to the weekly changes of the echocardiogram a tumour could be ruled out. A biopsy was not done. Before hospital discharge anticoagulation was discussed since the patient suffered from atrial fibrillation but not prescribed since a high risk of ventricle tamponade was feared.

In the literature only a few cases are reported yet.

An infant with severe sepsis and reduced liver synthesis of protein C resulted in thrombus formation in the left ventricle. After cardiac surgery the patient recovered.¹

Salmonella typhimurium was the cause of infection of a left ventricular thrombus in another case.² In a case of a 72-year-old patient an infected thrombus was identified

and removed surgically.³ In one case the infection of a thrombus resulted in a purulent pericarditis due to peptostreptococcus infection.⁴ Interestingly, in another case of a left ventricular thrombus a biopsy was taken showing a left ventricular thrombus abscess. In this case an operation was contraindicated due to poor physical condition of the patient with severe sepsis and he was treated by antibiotics but did not survive.⁵

Learning points

- In case of fever and thrombus in the left ventricle an abscess can be the cause.
- Medical therapy is justified in patients in a poor condition.
- Cardiac emboli can result as severe complications and as well as a purulent pericarditis.

Competing interests None.

Patient consent Obtained.

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