

Successful surgical repair of ventricular septal rupture

Clinical Case Portal

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Case Report

A 73 year old man was referred to pneumologist for dyspnoea and atypical chest pain. Electrocardiogram (fig. 1), chest X-ray and cardiac enzymes were normal.

A CT of the thorax excluded pulmonary embolism. Ten days later was referred again to the hospital because of increasing dyspnea. An echocardiogram showed akinesia of the inferior wall with a small aneurysm and a ventricular septal rupture with left to right shunt.

The cardiac catheterisation showed a subtotal stenosis of the right coronary artery and a normal left coronary artery. The patient was scheduled for open heart surgery.

The patient was operated successfully and received a patch to close the VSR. No CABG was performed.

Patient history prior to current observation :

Ten days before current observation, a 73 year old man was seen at the emergency department. He was referred to the pulmonogist because of dyspnoea and atypical chest pain at the right side of the thorax.

His past history revealed an inguinal hernia, appendicitis and silicosis. Physical examination showed no abnormalities. The electrocardiogram fig. 1 was normal, showing a sinus rhythm, horizontal axis and only a terminal negative T-wave in lead III. The chest X-ray was also normal. The cardiac enzymes were also normal. (CK 70 U/l, ASAT 17 U/l, ALAT 7 U/l, trop T < 0.01). A CT of the thorax was performed to exclude pulmonary embolism fig. 2. With this CT pulmonary embolism could be excluded. The patient was sent back home.

Clinical findings on admission, evolution and outcome :

Ten days later was referred again to the hospital because of increasing dyspnea. After the first event dyspnea had disappeared but re-appeared since four days. He was now referred to the cardiology department. There was increasing dyspnea, and orthopnea since four days. He did not have chest pain. The physical examination revealed shortness of breath, a blood-pressure of 90/65 mmHg and a heart rate of 114 bpm. The central venous pressure was elevated. The cardiac auscultation revealed normal heart sounds and a grade 3/6 holosystolic murmur at the apex and fourth intercostal space at the left. There were normal pulmonary breathings sounds. The chest X-Ray showed an enlargement of the heart and a consolidation in the right upper lobe. The electrocardiogram (fig. 3) showed a sinustachycardia and a small q in lead II. The cardiac enzymes were normal except an elevation of the Troponin T (0.37 U/l) and NT-pro-BNP (5660 U/l). Transthoracic echocardiography showed akinesia of the inferior wall with a small aneurysm and a ventricular septal rupture with flow from left to right (fig. 4 fig. 5 fig. 6). Coronary angiography showed a subtotal stenosis of the right coronary artery and a normal left coronary artery. The patient was scheduled for open heart surgery. The patient was operated successfully and received a patch to close the VSR. No CABG was performed.

Discussion

Ventricular septal rupture is a serious complications occurring in 2 percent of all myocardial infarctions. It typically occurs three to five days after an acute myocardial infarction. The mortality is high, with a 74% 30 days mortality reported in the GUSTO trial. Typically the complication occurs in patients with a first myocardial infarction, who received no thrombolysis, single-vessel disease, a large myocardial infarction and poor collateral circulation,. The rupture develops mostly at the margin of necrotic and non-necrotic tissue: in an anterior infarction at the apex and in an inferior infarction at the base of the heart.

Conclusion

The typical presentation is a patient with a sudden onset of hypotension, biventricular heart failure and a holosystolic murmur at the apex and left sternal border irradiating the right.

The diagnosis can be made by two-dimensional echocardiography with color-flow Doppler imaging or cardiac MRI.

The treatment is surgical. The optimal timing depending on the hemodynamic status. In patients with cardiogenic shock, urgent surgery is needed. In patients with well preserved ventricular function the lowest surgical risk is reported six weeks after the infarction. Stabilisation can be attempted with vasodilators, inotropic agents and intraaortic balloon counterpulsation. Transcatheter closure of post-infarction ventricular septal defect may be useful if the risk of surgical treatment is too high.

References

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Fig. 1 :

[Successful surgical repair of ventricular septal rupture_ ECG on 1st evaluation](#)

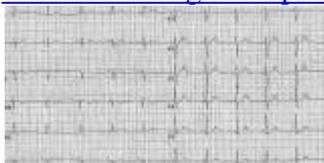


Fig. 2 :

[Successful surgical repair of ventricular septal rupture_ multislice CT](#)



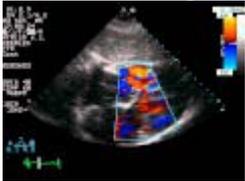
Fig. 3 :

[Successful surgical repair of ventricular septal rupture_ ECG on 2nd evaluation](#)



Video 1 :

[Successful surgical repair of ventricular septal rupture TTE CFM subcostal view](#)



Video 2 :

[Successful surgical repair of ventricular septal rupture TTE 2D AP2C](#)



Video 3 :

[Successful surgical repair of ventricular septal rupture TTE 2D AP4C](#)

