

Left ventricular perforation during cardiac catheterization: a case report

Diagnostik sol kalp kateterizasyonu sırasında ventrikül rüptürü: Olgu sunumu

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The incidence of acute left ventricular perforation and cardiac tamponade as a complication of diagnostic left heart catheterization is very rare. We report myocardial perforation during left ventriculography of a patient who required emergent surgical repair.

Key words: Cardiac catheterization; ventricular rupture; cardiac tamponade.

In the era of rapidly advancing technology, there is a large increase in the number of catheter based procedures. Cardiac perforation and tamponade is a fatal complication that may result from catheter based procedures. Prompt recognition and rapid treatment of this fatal complication is essential. We report a successful surgical treatment of a left ventricular perforation that occurred during diagnostic catheterization.

CASE REPORT

A 74-year-old woman was referred to our institute with exertional angina. Risk factors for cardiovascular disease included hypercholesterolemia, diabetes mellitus and hypertension. Physical examination showed no abnormalities. The electrocardiogram showed sinus rhythm with no Q-waves and ST abnormalities. Coronary angiography was planned for the patient. After insertion of the femoral catheter, a pig tail angiography catheter was used for the ventriculography. Sudden and unanticipated hemodynamic collapse appeared just after the performance of the ventriculography. Recognizing the leak from the apical portion of the left ventricle (Fig. 1, 2) we performed an emergent pericardiocentesis by a subxiphoid small incision. Because of the ongoing bleeding and hemodynamical instability the patient was taken to the operation room. After gaining access with median sternotomy and evacuation of the pericardial hematoma, left ventricular perforation site at the apical portion was found and repaired with pledgeted sutures.

Diagnostik sol kalp kateterizasyonu esnasında sol ventrikül perforasyonuna bağlı kardiyak tamponad nadir rastlanılan bir komplikasyondur. Kliniğimizde sol ventrikülografi esnasında miyokardiyal perforasyon gelişen ve acil cerrahi onarım uygulanan 74 yaşında bir bayan olguyu sunuyoruz.

Anahtar sözcükler: Kardiyak kateterizasyon; ventrikül rüptürü; kardiyak tamponad.

The patient recovered uneventfully and was discharged on postoperative sixth day.

DISCUSSION

With the advancing technology, catheter based diagnostic and interventional procedures are being performed with an increasing frequency.^[1-4] Therefore, incidence of catheter based complications might be encountered.^[4] Cardiac perforation is a rare fatal complication of diagnostic and interventional procedures that may cause acute hemorrhagic pericardial tamponade. The incidence of cardiac perforation has been reported previously as 1.5%-4.7% during valvuloplasty,^[3-5] 0.2%-1% for radiofrequency ablation,^[6,7] 0.1%-0.2% for electrophysiologic study,^[3,8] 0.38% for cardiac biopsy,^[3] 0.08% for coronary angioplasty,^[3] and 0.006%-0.01% during diagnostic catheterization.^[3,4] Gehl et al.^[9] reported three cardiac perforations during diagnostic cardiac catheterization among 6675 patients, perforation sites were the left atrium in two patients and right atrium in one patient. Keltai et al.^[10] described four cases of cardiac perforation in 11000 procedures; one at the left atrium and three in the right ventricle. As it can be concluded from these previous reports, perforation sites may be different according to the procedure but left ventricular perforation without a prior myocardial infarction is very rare.

Cardiac perforation was recognized most commonly when acute cardiac collapse developed during or immediately after a catheter based procedure. Echo-guided

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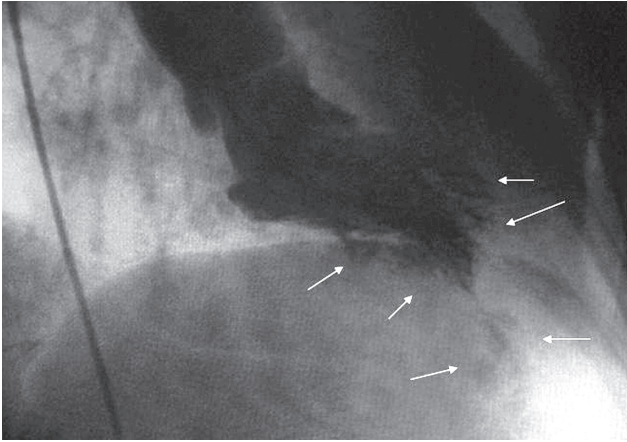


Fig. 1. Mid-sistolic ventriculographic image showing the leak around the apical portion of the left ventricle to the pericardial space.

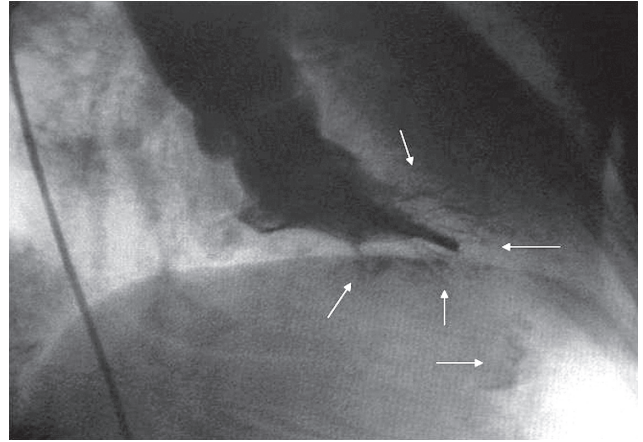


Fig. 2. End-sistolic ventriculographic image showing the leak around the apical portion of the left ventricle to the pericardial space.

pericardiocentesis is a choice of treatment of cardiac tamponade^[3] but surgical exploration is indicated when control of bleeding and hemodynamic stability is not restored rapidly.

As a conclusion, cardiac perforation, even during diagnostic cardiac catheterization should not be underestimated and must be remembered that prompt recognition of the complication allows rapid and effective treatment.

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