CASE REPORT

Loculated cardiac hematoma causing hemodynamic compromise after cardiac surgery

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Aortic regurgitation; Hematoma; Aortic valve replacement; Cardiac tamponade

Abstract The authors describe a case of a rare complication occurring after cardiac surgery. Three weeks after aortic valve replacement a young male became hemodynamically unstable. The echocardiogram showed a large loculated hematoma compressing the right atrium. The patient was reoperated and the mass was removed. Recovery was complete.

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Case report

We present a case of a 37-year-old hypertensive male admitted with dyspnea on exertion, orthopnea, paroxysmal
nocturnal dyspnea, fatigue and bilateral leg edema. The echocardiogram revealed a dilated left ventricle (diastolic diameter 79 mm, systolic diameter 70 mm) with severely depressed left ventricular function (20% by Simpson’s method) and severe aortic regurgitation. He underwent aortic valve replacement and reduction of the ascending aorta. The patient’s clinical condition improved significantly but discharge was delayed due to social problems.

Figure 1 Transthoracic echocardiography showing a mass measuring 9 cm × 6 cm and intermediate echogenicity causing almost complete collapse of the right atrium (A, B and D); mild (6 mm) circumferential pericardial effusion (C).

Figure 2 Contrast-enhanced computed tomography showing a hematoma 9.4 cm × 8.5 cm × 5.9 cm compressing the right vena cava and right atrium (A, C and D); the collection was caused by an active bleeding point 2.4 cm above the aortic prosthesis (B) in the ascending aorta.
Three weeks after surgery he suddenly became hypoten-
sive, tachycardic, sweating, pale with cool extremities,
and anuric. The electrocardiogram showed sinus tachy-
cardia with left ventricular hypertrophy, and the bedside
echocardiogram revealed a medium-sized echogenic mass
measuring 9 cm × 6 cm, causing almost complete collapse
of the right atrium, and mild (6 mm) circumferential pericar-
dial effusion (Figure 1A–D). Prosthetic function was normal.
The emergency computed tomography (CT) scan showed
a hematoma measuring 9.4 cm × 8.5 cm × 5.9 cm compress-
ing the right atrium and an active bleeding point 2.4 cm
above the aortic prosthesis in the ascending aorta (Figure 2A
and B). The patient was transferred to the cardiothoracic
surgery center. Surgical exploration revealed a large orga-
nized pericardial hematoma compressing the right atrium.
It was removed and the atrial suture was reinforced. The
recovery was uneventful. One month later he was clinically
well and the echocardiogram showed no pericardial effu-
sion, a functional biological valve and severely depressed
left ventricular function.

Discussion
Loculated hematomas with cardiac tamponade arising after
heart surgery are a complication rarely reported in the
literature. They are significantly more common after coro-
nary artery bypass and are generally located posteriorly,2
although compression of any cardiac chamber can occur,
with right atrial involvement being the most common.3 Clots
are limited by adhesions causing an important mass effect
and interfering with diastolic filling.

Most cases appear in the early phase, developing in the
first hours or days of the postoperative period4 and mani-
festing as atypical cardiac tamponade.5 Few cases have
been reported in the literature as long as three weeks
after surgery. Delay in reaching a correct diagnosis can neg-
atively affect prognosis, since it is extremely important
to treat the condition immediately.6 Echocardiography, as
an easily available and rapid imaging exam, can provide
detailed information including the exact location of the
hematoma (extracardiac, intrapericardial, or intracavitary)
and the degree of compression.7 Nevertheless, ultrasound
images do not always clarify the situation and other imaging
techniques, such as cardiac contrast CT or magnetic
resonance imaging (MRI), may be needed1 to obtain addi-
tional information on the location and dimensions of the
hematoma as well as the mechanism behind its genesis.9
MRI is limited in its applicability due to hemodynamic
instability.

Conclusions
A loculated pericardial hematoma leading to localized tam-
ponade may appear on imaging studies as a cardiac mass.
The differential diagnosis of this mass on imaging stud-
ies is usually challenging.10,11 Recognition of this entity is
often delayed because of the absence of the classic signs
associated with cardiac tamponade. A high level of clinical
suspicion complemented with a rapid imaging evaluation is
crucial in order to establish diagnosis and prompt treatment.

Ethical disclosures
Protection of human and animal subjects. The authors
declare that no experiments were performed on humans or
animals for this study.

Right to privacy and informed consent. The authors
declare that no patient data appear in this article.

Confidentiality of data. The authors declare that they have
followed the protocols of their work center on the publica-
tion of patient data.

Conflicts of interest
The authors have no conflicts of interest to declare.

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