- The characterization of the intracavitary mass. Both the echocardiographic description and the image acquired suggest the diagnosis of myxoma: 80% of them anchor to the left atrium and 16% develop embolic phenomena that are more common in large villous tumors (irregular and jelly-like, similar to the capture of the echocardiography shown).[2] The main diagnostic doubt here has to do with the image of a thrombus. Different series recommend performing computed tomography scan, magnetic resonance imaging or both before establishing differential diagnosis. In this case, given the general situation of the patient, we could consider completing the study of characterization by performing one transesophageal echocardiography. Although the definitive diagnosis is always histological with the study of the surgical piece, the analysis of the fragments extracted in the thrombectomy may help.

- The neurologic prognosis is key to decide the therapeutic attitude. With the data provided by the computed tomography scan (and for the lack of data from the magnetic resonance imaging and the angiography, which by the way were difficult to perform considering the situation of the patient), it does not seem plausible to perform an invasive approach using the thrombectomy. Also, the hemorrhagic risk of a patient on ECMO contraindicates thrombolysis. Therefore, we can only maintain anticoagulation, establish anti-edema measures, and make thorough assessments to determine the patient's neurological prognosis before indicating the surgical resection of the mass.

- The management of a large mass that has become occluded and then caused a severe double mitral lesion that, in turn, jeopardizes hemodynamic instability should be urgent surgical resection. However, in a patient with refractory CS on ECMO, severe systolic dysfunction due to extensive ongoing acute myocardial infarction, and diffuse cerebral edema, the risk/benefit ratio should be taken into serious consideration. Several contemporary series on the surgical management of primary tumors recommend performing minimally invasive surgery,[3] although in all of them patients with large tumors or hemodynamic instability have been excluded. Therefore, if the resection of the mass is to be performed, we should choose conventional surgery, in hypothermia with total cardiopulmonary arrest, and under neurological protective measures.

In sum, this is a complex case, one of those that do not see the inside of a clinical trial or that do not fall within the recommendations established by the clinical practice guidelines. It is not easy to establish this or that therapeutic attitude with a clear-cut image of the whole situation in a type of patient where the decision-making process has a lot to do with the evolution of the patient who also needs bedside monitoring. Common sense and the best clinical judgement should be the rule of thumb here. It will be very interesting to know the outcome.

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An unusual cause of cardiogenic shock. Case resolution

Una causa inusual de shock cardiogénico. Resolución

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CASE RESOLUTION

The evolution of the patient was not favorable, brain death was declared 24 h after admission, and the patient was eventually declared dead. The microscopic analysis of the coronary aspirate revealed the presence of mesenchymal tissue with myxoid changes consistent with tumor embolism (figure 1) whereas the macroscopic piece confirmed the diagnosis of atrial myxoma (figure 2, arrow).

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Online: 16-09-2019.
https://doi.org/10.24875/RECICE.M19000055

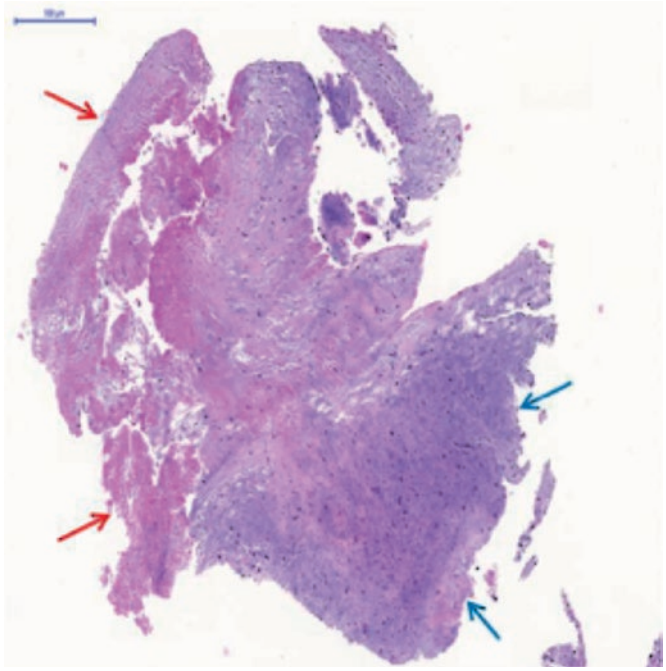

Figure 1. The red arrows point at the fibrinoid tissue. The blue arrows point at the mesenchymal tissue with myxoid changes.

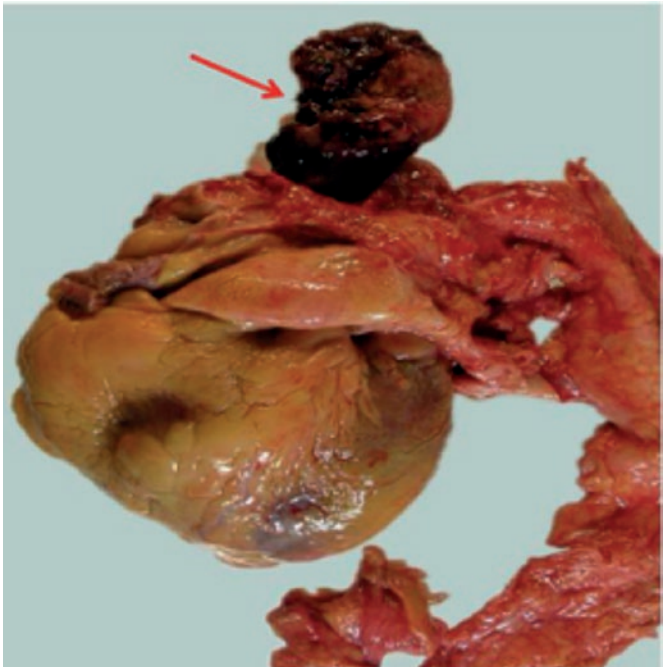

Figure 2. Atrial myxoma, macroscopic piece.

Although they are regarded as benign tumors, cardiac myxomas can lead to life-threatening events. Among their different ways of presentation, coronary embolism is one of the least common of all (0.06%). One possible explanation to this low incidence can be found in the anatomical-functional characteristics such as the existing straight angles between the aortic root and the coronary ostia, the protection of coronary arteries by the cusps of the aortic valve, and the coronary filling during ventricular diastole.

The shape of the tumors is one of the leading predictors of embolization, and papillary or villous myxomas are thought to have the highest potential to cause embolisms. According to the medical literature available, the right coronary artery is the most common location of embolization; however, there is an interesting percentage of normal coronary arteries on the angiography[1] probably attributed to the fact that the myxomatous histology of the tumor favors greater fragmentation, distal spread, and spontaneous resolution. The clinical signs of tumor embolism go from silent events to ST-segment elevation acute myocardial infarctions (STEMI) complicated with cardiogenic shock, as it was our case, and the emergent therapy here is similar to the management of atherosclerotic coronary syndromes.

We should emphasize that the use of mechanical circulatory assist devices in the setting of STEMI-related cardiogenic shock is not recommended systematically (evidence IIbC) since, to this day, we still have not seen any improvements in the short or long-term mortality rate.[2] However, its use may be an option on a per-patient basis in to achieve hemodynamical stability, guarantee the proper perfusion of vital organs or as bridging therapy for the recovery of myocardial function.

Given the presence of complete atrioventricular block and severe hypotension, in our case we considered implanting the Impella CP device (AbioMed, Danvers, Massachusetts, United States), which was the device that provided the highest utility since it does not require arterial pulse or an electrocardiographic registry to operate; however, performing a transthoracic echocardiography prior to the implantation of the device could have been decisive for diagnostic purposes and to re-think what was the best therapeutic strategy to use since, probably, the clinical situation of the patient was not only due to the STEMI, but also to the obstructive effect of the mass and the systemic embolization that may have exacerbated after the implantation of the device.

With this case we learned that performing a transthoracic echocardiography in a patient with cardiogenic shock before approaching other therapeutic attitudes is essential. Also, that the delay involved should not care at all given the benefits derived from finding possible contraindications as it happened with our case.

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