Anterolateral papillary muscle rupture with non obstructive coronary artery disease

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BACKGROUND Papillary muscle rupture is an uncommon, potentially fatal condition that frequently results in acute severe mitral regurgitation (MR) and life-threatening cardiogenic shock. Survival depends on prompt recognition and surgical intervention.

CASE PRESENTATION A previously asymptomatic 62-years-old man with unremarkable past medical history, presented to the prehospital emergency team with acute pulmonary edema, without chest pain, less than 30 minutes long; Rapid evolution in cardiac arrest in pulseless electrical activity with return of spontaneous circulation within 6 minutes of cardiopulmonary resuscitation; Transported to the emergency room intubated with orotracheal tube, PaO₂/FiO₂ ratio <50, BP 86/55 mmHg. Initial EKG showed supraventricular tachycardia with inverted T wave V4-V6; Laboratory tests revealed Urea/Creatinine 137/5.6 mg/dL, CK 317U/L, T troponin 0.272 ng/mL. Transthoracic echocardiogram showed severe mitral regurgitation (MR) due to possible flail leaflet and hyperdynamic left ventricle (LV). To better characterize the MR mechanism, it was performed a transesophageal echocardiogram that revealed papillary muscle rupture and already moderate LV systolic dysfunction, without any mass/vegetation/thrombus; After insertion of an intra-aortic balloon pump, the patient underwent emergent coronary angiography that showed nonobstructive coronary artery disease and was immediately transferred to a cardiothoracic department. Admitted for emergency surgery less than six hours after the onset of symptoms. At surgical inspection, it was observed rupture of the anterolateral papillary muscle (APM). The patient underwent mitral valve replacement with biologic valve; Pathology demonstrated acute ischemia of the underlying myocardium. The postoperative period was complicated by the need of inotropic support, prolonged mechanical ventilation and nosocomial pneumonia. Postoperative echocardiography showed no MR. The patient was discharged 29 days later to a medical recovery unit and he is now back to his normal life, without major limitations.

DISCUSSION We have described an unusual presentation of acute MR due to isolated APM rupture in the absence of obstructive artery disease. The papillary muscles are subendocardial structures, and even a small area of myocardial infarction can cause papillary muscle ruptures. Therefore, we cannot exclude the possibility of spontaneous reperfusion, coronary spasm or embolic phenomenon as possible diagnosis hypotheses.