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Electrocardiogram Quiz – Case 23

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A 39-year-old woman, intubated, sedated and under inotropic agents for cardiogenic shock of four hours duration was transferred to our hospital from a maternity center. The patient had been previously hospitalized for four days after an uncomplicated childbirth. It was her second normal delivery of a healthy infant. On the day of planned discharge from hospital, she developed chest pain, dyspnea and acute pulmonary edema. The patient's medical history was largely unremarkable, apart from Hashimoto's thyroiditis. The 12-lead surface ECG is depicted in figure 1.

Questions

a. What is your diagnosis based on the ECG depicted in figure 1?
b. What further investigations and treatment would you suggest?

Comment

Acute myocardial infarction (AMI) during pregnancy is a very uncommon clinical condition. Furthermore, spontaneous coronary artery dissection (SCAD) although is a rare cause of AMI in the general population, it is usually responsible for the occurrence of acute coronary events in women during pregnancy or the postpartum period.

The clinical presentation of SCAD ranges from asymptomatic pathology to AMI (>80% presenting with ST-segment elevation on ECG), and sudden cardiac death.

Pregnancy and postpartum period are associated with several hormonal and hemodynamic alterations that can persist for up to six months after delivery. For the time being, there is no unifying theory proposed accounting for the correlation between SCAD and the peripartum period. However, it is widely believed that a combination of morphological changes in the arterial wall and hemodynamic stress may be responsible for the condition described.

Additionally, the mortality rate in AMI due to SCAD in pregnant and postpartum women is relatively high, ranging from 38% to 66%.

At the maternity center thrombolysis was decided, and intrave-

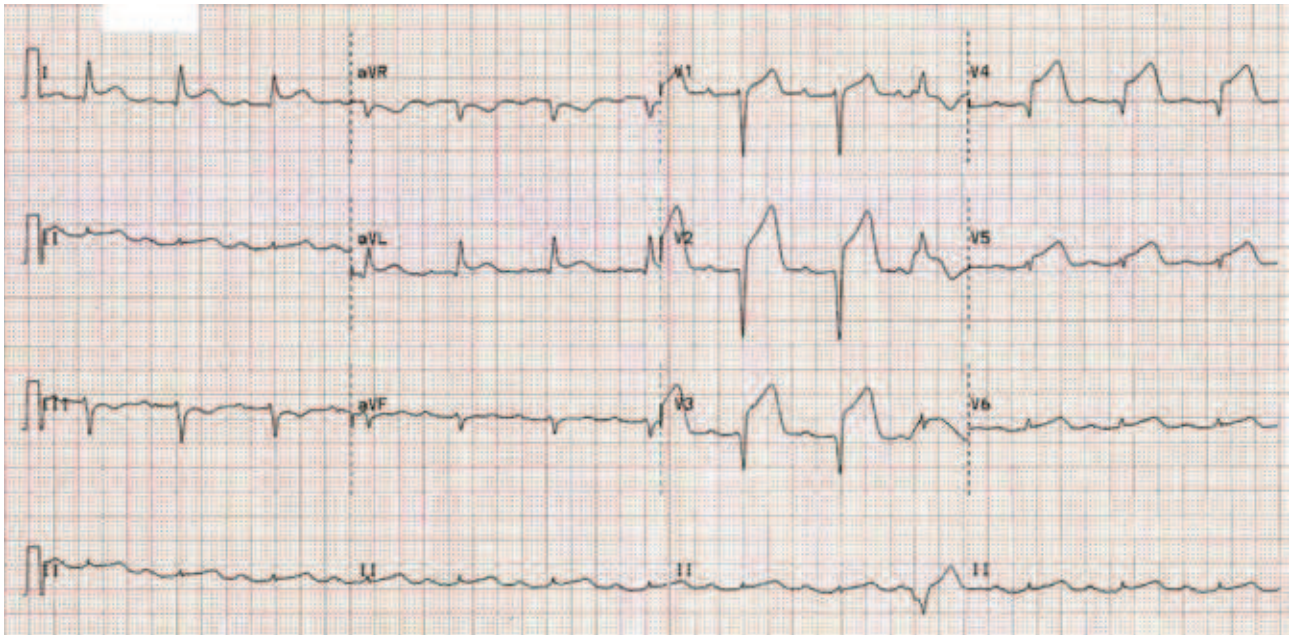

Figure 1

nous alteplase and 8,000 IU of unfractionated heparin were administered to the patient. At our center, coronary arteriography, under intraaortic balloon pump, revealed a spiral dissection in the left main coronary artery extending down the left anterior descending (LAD) and the left circumflex (LCX) coronary arteries. The likelihood of a successful recanalization of the LAD by a percutaneous technique was considered low due to the spiral dissection and total occlusion of the vessel. The patient was urgently transferred to the operating room for coronary artery bypass surgery. She received the left internal mammary artery to the proximal LAD and two saphenous vein grafts – to the obtuse marginal branch of the LCX and the distal LAD, respectively. Additionally, she received an extracorporeal membrane oxygenation Levitronix device (ECMO) for left ventricular support. Peri- and postoperatively, the patient exhibited excessive bleeding disorders. She remained in the intensive care unit for twenty four days in a critical condition and died of multiple organ failure.

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Diagnosis: *Acute myocardial infarction due to spontaneous coronary artery dissection*