

ANSWER TO PHOTO QUIZ

A troubled heart

Keywords - myocardial infarction, ECG, diagnosis

Diagnosis

This case is typical for right ventricular (RV) infarction: an older male patient with a couple of risk factors presenting with chest pain, dyspnoea and an elevated troponin level. The ECG registration shows an obvious acute inferior ST-elevation myocardial infarction (STEMI) with elevations in II, III and aVF. Leads V2 and V3, and to a lesser extent V4-6, show ST depressions as a sign of posterior myocardial damage.

What is unusual for posterior ischaemia is the mild ST elevation in V1. ST depression should be expected in V1 as a sign of posterior ischaemia. An inferoposterior STEMI should alert to possible RV involvement. When RV involvement is present, there is almost always some elevation in V1. In such a case it is essential to record a right-sided ECG (*figure 2*).

RV infarction complicates up to 40% of inferior STEMIs. Isolated RV infarction is, however, extremely uncommon. It occurs after occlusion of the right coronary artery (RCA) as the RV blood supply branches off the RCA.

Patients with RV infarction are usually very preload sensitive (due to poor RV contractility) and can develop severe hypotension in response to nitrates or other preload-reducing agents. Hypotension in RV infarction is treated with fluid loading and nitrates are contraindicated.^[1] Since the atrioventricular (AV)

node receives its blood supply from the RCA (AV nodal branch), an inferior infarction can be complicated by conduction disturbances. Most commonly this is sinus bradycardia (up to 40%), but also second-degree AV block or complete heart block (up to 2.9%)^[2] can be observed.

Our patient underwent emergency coronary angiography which displayed an occlusion of the proximal RCA and stenting with four drug-eluting stents was performed. Ultrasound showed a poor RV function and the intervention by complicated with complete heart block for which a DDD-R pacemaker was inserted.

Conclusion

Right ventricular infarction.

Disclosures

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References

1. Namana V, Gupta SS, Abbasi AA, Raheja H, Shani J, Hollander G. Right ventricular infarction. *Cardiovasc Revasc Med.* 2018;19(1 Pt A):43-50.
2. Singh SM, FitzGerald G, Yan AT, et al. High-grade atrioventricular block in acute coronary syndromes: insights from Global Registry of Acute Coronary Events. *Eur Heart J.* 2015;36:976-83.

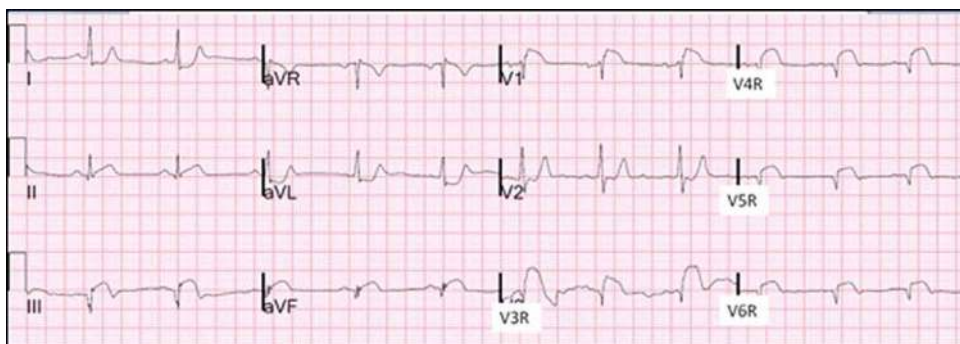


Figure 2. Right-sided ECG. Note: in this case V1 and V2 were not reversed, so V1=V1, V2=V2, V3=V3R, V4=V4R and so on