Detection of right ventricular ischemia by SPECT myocardial perfusion imaging

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CASE PRESENTATION

A 54-year-old man presented with acute bilateral lower extremity pain and weakness for 3 days thought to be ischemic in etiology. His past medical history included hypertension, hyperlipidemia, coronary artery bypass surgery, carotid stenting and ablation of atrial fibrillation. He underwent regadenoson stress gated SPECT myocardial perfusion imaging before planned vascular surgery.

The rest ECG was abnormal (Figure 1, Top panel). The myocardial perfusion images showed extensive perfusion abnormalities involving 50% of the myocardium in the territories of all 3 major coronary arteries (Figure 1, Bottom panel, gray and color scales) with decreased ejection fraction of 28%. In addition, there was right ventricular (RV) ischemia and increased RV tracer uptake suggestive of pulmonary hypertension. The systolic pulmonary artery pressure by Doppler was 45 mmHg.

DISCUSSION

Our case shows RV ischemia in association with ischemia in the inferior wall of the left ventricle (though our patient had more extensive ischemia). The presence of increased RV uptake, which could be relative due to decreased left ventricular uptake or real due to pulmonary hypertension, made the identification easier.

The use of automated programs for the evaluation of RV ischemia has not been reported yet, but hopefully this case presentation will encourage such development. We suspect based on our experience (unpublished data) that RV ischemia is more common than appreciated.[1,2]

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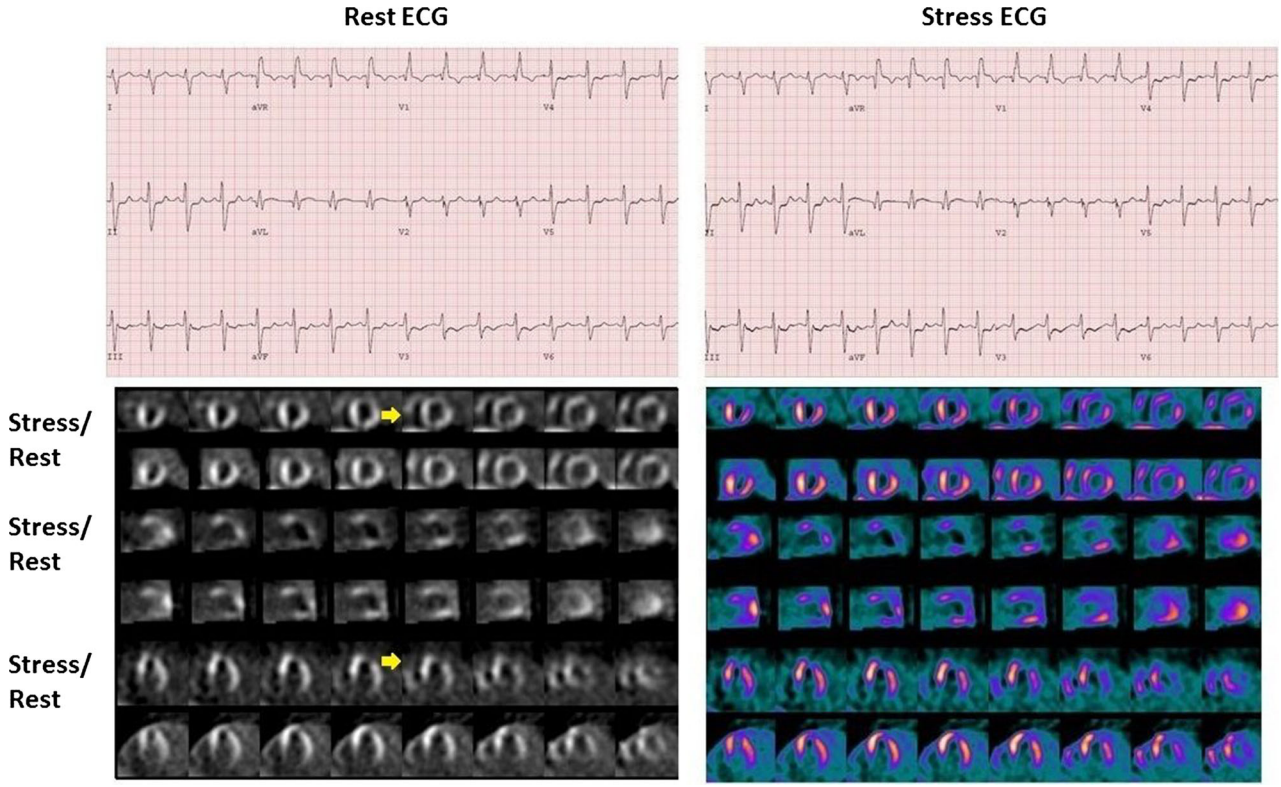

Figure 1. *Top panel* Rest and stress ECG's showing Sinus rhythm, right bundle branch block and ST/T changes. *Bottom panel* Stress/Rest SPECT Tc-99m sestamibi myocardial perfusion images in *gray* and *color*. The perfusion pattern is abnormal consistent with 3-vessel disease (fixed and reversible defects). There are also reversible perfusion defects involving the right ventricle seen in short-axis and horizontal long-axis projections. The *arrows point* to 2 such slices though the abnormality is seen in multiple slices.

References

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