CLINICAL VIGNETTE

Case of PVCs – Asymptomatic PVCs and Long-Term Complications

Sahar Sohrabian, MD

A 54-year-old male presented to Cardiology for pre-operative evaluation prior to hernia surgery. He is "healthy" overall and participates in moderate exercise three times per week without limitations. For the past few years, he has been on testosterone replacement therapy with polycythemia. Past medical history also includes depression and anxiety. He drinks two large cups of coffee per day and about 3 drinks of alcohol per week. He denies any chest pain, breathing difficulties or palpitations and has never been told he has an abnormal heartbeat. He denies any drug use and does not take supplements. He smoked tobacco but quit several years ago. There is no notable family history.

On exam his vital signs are normal. His physical exam was overall unremarkable except for ectopy auscultated during cardiac examination. Initial ECG showed sinus rhythm at 82/min with multiple PVCs with bigeminy. The PVCs had a marked inferior axis with a right bundle branch block (RBBB) morphology suggestive of left ventricular outflow tract origin. Labs are significant for hemoglobin of 18.7 mmol/dL and hematocrit of 55.9 mmol/dL.

An event monitor showed 17 episodes of ventricular tachycardia (VT), with the longest lasting 4 beats. He had frequent unifocal PVCs totaling 10.5% of all beats. An echocardiogram revealed a Left Ventricular ejection fraction (LVEF) of 45% and mild aortic regurgitation. He was able to exercise 10 mins and 20 seconds achieving 12.1 METS on treadmill stress test without symptoms or significant ECG changes. Of note, during peak exercise there were no PVCs. He was started on metoprolol succinate and lisinopril and referred to cardiac electrophysiology for further evaluation.

The patient was an appropriate candidate to proceed with hernia surgery without any further cardiac testing. The level of cardiomyopathy was out of proportion to the moderate outflow tract PVC burden. Cardiac MRI was scheduled for further evaluation of cardiomyopathy and a 3-month trial on maximal tolerated medical therapy was advised before repeat echocardiogram and consideration of targeted PVC treatment.

Discussion

Premature ventricular contractions are common arrhythmias in patients with and without heart disease.[1] Symptoms may include skipped beats or a "pause" in heartbeat, globus sensation in the neck, dizziness, short of breath, chest pain, and palpitations. When periods of bigeminy or trigeminy occur, symptoms may be prolonged. The range of burden can be as low as <1% to as a high as 40-50% of all heart beats during multiday recordings. Prior studies of 24 hour holter monitoring suggested that 10,000-20,000 PVCs in 24 hours could increase the risk of PVC-induced cardiomyopathy, or a worsening of LVEF due to high burden of PVCs, however additional variable such as PVC axis and PVC coupling interval (the interval between the previous normal beat and the PVC) also play a role.[2] However, PVCs may be a sign of a cardiomyopathic processes rather than a cause.

The most common type of idiopathic, or benign form, of PVC is outflow tract PVCs. These localize to the vicinity of the semilunar valves and regional anatomy including the right ventricular and left ventricular outflow tracts. Symptomatic patients may benefit from treatment of PVCs with either medical therapy or catheter ablation if no reversible causes are found. For patients without symptoms, a normal LVEF, and a high burden of PVCs there is debate as to what the most appropriate strategy should be employed. Watchful waiting, medical therapy, and catheter ablation may all be reasonable in the right setting with shared decision making between the physician and patient.[1]

REFERENCES

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