Vasovagal syncope during spirometric exercise

Sir,

A 48-year-old male patient operated for aortic valve replacement was extubated uneventfully. Patient was off inotropic and vasoconstrictor support. During the recovery period, patient was advised to do spirometric breathing exercises. While doing spirometric breathing, patient suddenly had a sudden loss of consciousness with bradycardia and hypotension. Immediately the patient was intubated, and atrial pacing was started with epicardial pacing. As patient recovered consciousness and hemodynamic stability, he was extubated.

The reflex syncopes are because of a sudden failure of the autonomic nervous system to maintain adequate vascular tone during orthostatic stress, resulting in hypotension with bradycardia resulting in cerebral hypoperfusion and loss of consciousness.[1] Reflex syncope is (1) neurocardiogenic (vasovagal) syncope and (2) carotid sinus syndrome. It is commonly seen in younger patients and presents with a prodromal phase (nausea, lightheadedness, visual changes or diaphoresis) followed by a sudden loss of consciousness. Recovery is generally rapid and uneventful. The reasons for neurocardiogenic syncope are unclear. Predisposing factors can be pain, emotional distress, or prolonged standing. Pathophysiology of vasovagal syncope is often related to orthostatic stress.[2] Increased amount of peripheral venous pooling decreases venous return to the heart so precipitously that a significant rise in ventricular inotropy occurs. This hypercontractile state stimulates mechanoreceptors that would normally discharge impulses only during stretch.[3] The sudden increase in neural signal to the medulla causes "paradoxic" decline in sympathetic activity that results in bradycardia, hypotension and syncope.[4,5] Spirometric breathing exercises are routine practices after cardiac surgery to improve pulmonary function. In the present case, forceful and repeated blowing while performing spirometry breathing exercises might have caused sudden decrease in venous return to the heart and precipitated vasovagal syncope. Slow and steady breathing exercise can be helpful in preventing such a complication.

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