

The Characteristic Doppler Pattern of the Left Ventricular Outflow Tract in a Patient with Orthostatic Hypotension

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A 73-year-old man with uncontrolled nocturnal hypertension presented to the hospital for postural hypotension. He presented with a past history of cerebral infarction, parkinsonism, transient ischemic attack, and chronic renal failure.

An electrocardiogram, chest X-ray, and laboratory test revealed normal findings. Ambulatory blood pressure (BP) monitoring was performed for 24 hours to evaluate his pattern of BP revealing a day-time average BP of 136/82 mmHg and night-time average BP of 190/106 mmHg (Fig. 1A). A transthoracic echocardiography showed normal heart functioning; however, an interesting Doppler pattern in the left ventricular outflow tract (LVOT), according to each posture, was found. Greater decreased velocity-time integrals in a standing position were noted than when in a sitting or supine position with significantly decreased blood pressure (Fig. 1B-D).

Orthostatic hypotension is not a rare symptom in the general population. Impaired autonomic reflexes can lead to a significant reduction in BP upon standing. The impairment results from deficits in hemodynamic responses, including inadequate ventricular filling, excessive decreases in cardiac output or venous return, and failure of the skeletal muscle pump to increase venous return to the heart.¹⁻³⁾

We evaluated the Doppler at LVOT according to each posture in one patient and it presented an interesting Doppler pattern immediately after a postural change. A doppler image can present typical and characteristic hemodynamic changes of stroke volume in orthostatic hypotension. To the best of our knowledge, this is the first report showing the decreasing stroke volume in orthostatic hypotension through various position changes in one patient.

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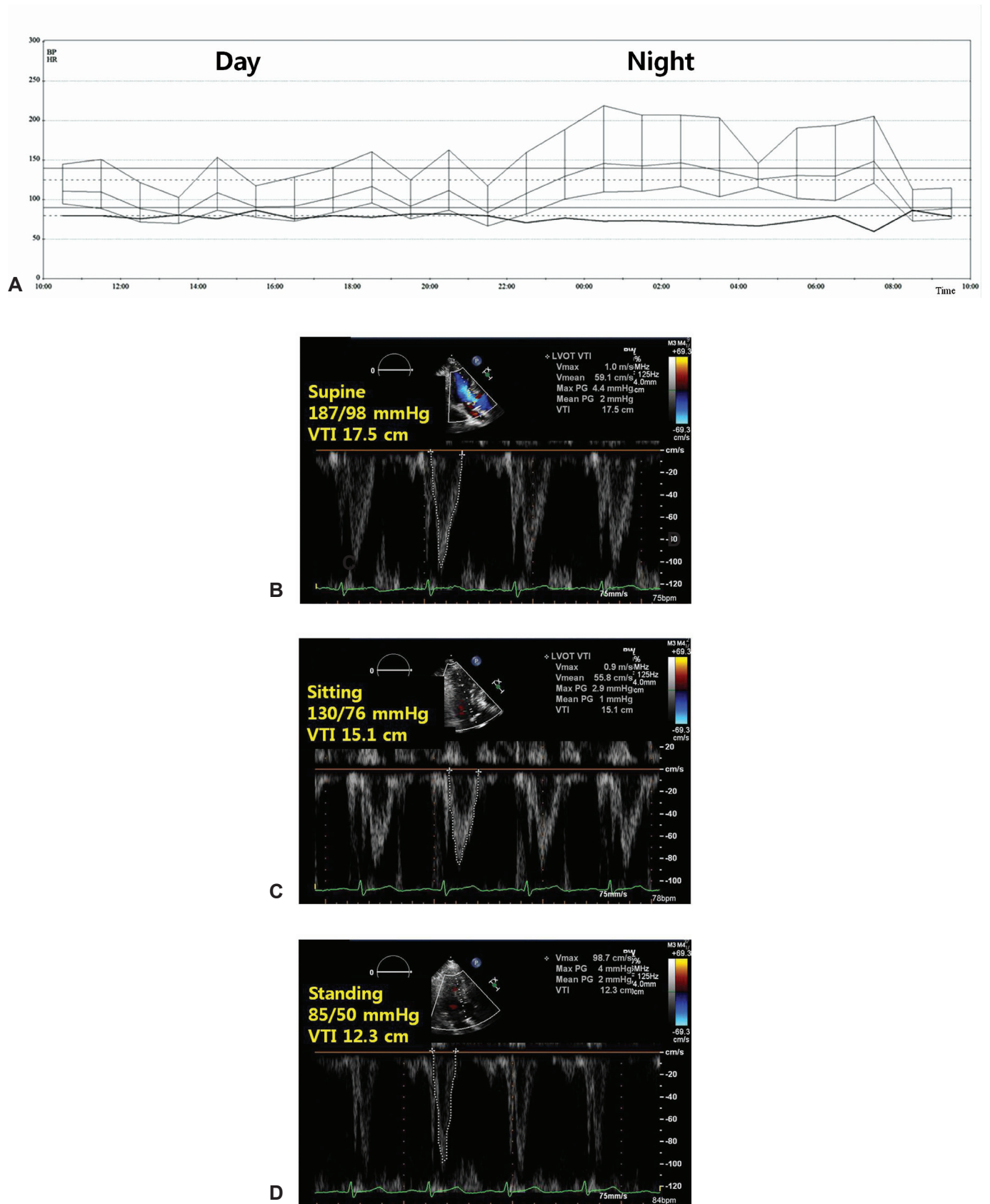


Fig. 1.