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Cardiac Examination: We Should Believe what We Hear and Feel

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Abstract

A 64 year old male with end stage renal disease on hemodialysis was evaluated for dyspnea in the emergency room. An urgent transthoracic echocardiogram done for the physical finding of systolic ejection murmur revealed severe aortic stenosis with valve area of 0.98 cm^2. Cardiac catheterization revealed non-obstructive coronary artery disease and moderate aortic stenosis. Patient developed an access site hematoma resulting in prolonged hospital stay. In the meanwhile, hemodialysis resulted in relief of his dyspnea. The present case brings into perspective the importance of physical exam for efficient and 'do not harm' principle of medicine.

Case

A 64-year-old male presented to emergency room (ER), with complaints of shortness of breath for 1 day. He had a past medical history of hypertension, end stage renal disease on hemodialysis (HD), and grade I obesity. He reported that he missed his last HD session, which was 2 days prior to presentation. He denied any chest pain, palpitations, cough, or fever. Patient further mentioned that he was able to walk >10 blocks without any chest pain or shortness of breath until 2 days ago. In the ER, examining physician documented presence of a systolic ejection murmur heard best at the 2nd right intercostal space and bilateral rales, 1+ pedal edema; jugular venous distention of 4 cm. Urgent transthoracic echocardiogram (TTE) was ordered by ER physician to further investigate the aortic stenosis (AS) murmur. TTE showed aortic valve area 0.98 cm^2, mean gradient 32 mmHg, aortic jet velocity 3.5 m/s; mild left ventricle (LV) concentric hypertrophy with grade 1 diastolic dysfunction, and LV ejection fraction of 60-65%. Subsequently, patient was admitted to cardiac telemetry and primary team consulted renal and cardiothoracic (CT) team for HD and for aortic valve replacement (AVR), respectively.

CT surgery team requested cardiology consult as a part of pre-operative assessment for possible surgical AVR. Physical examination by the attending cardiologist was remarkable for II/VI mid-systolic peaking crescendo-decrescendo murmur with normal carotid pulse upstrokes. Cardiac catheterization was recommended for further evaluation as there was discrepancy between the findings on noninvasive testing and physical examination regarding severity of the AS. Cardiac catheterization revealed non obstructive coronary artery disease (30% stenosis of mid RCA) and moderate AS (aortic valve area 1.38 cm^2, mean gradient 28 mmHg, aortic jet velocity 3.3 m/s). During recovery period patient developed hematoma at access site (right groin), which was managed conservatively but resulted in prolongation of his hospital stay by 48 h. In the meantime, the patient underwent hemodialysis and had symptomatic relief in his dyspnea. He was discharged home to follow up with his outpatient hemodialysis center.

Perspective

This gentleman presented to ER with complains of shortness of breath after missing a HD session. Although, not incorrect, the systolic murmur heard by ED physician led to a cascade of downstream testing. In fact, the 'benign' 'non-invasive' testing ordered as a part of comprehensive work-up led to a delay for patient getting the HD session. Physical examination is an essential part of accurate assessment of a patient's disease processes. However, our daily practice has been increasingly occupied by 'tunneled vision' of things.

Aortic stenosis (AS) is one of the most common valvular diseases associated with systolic murmur in the elderly population [1]. An essential part of physical exam of AS is assessing the severity. Munt et al. found significant correlation of physical exam findings like grade of murmur and timing of murmur peak with severity of AS [2]. Further, delay in carotid upstroke and decreased amplitude was well associated with increasing grade of AS severity as measured by aortic valve area (AVA). Although, one may argue that physical exam is limited by observer expertise and inter-observed variability [3], echocardiographic parameters have their own pitfalls. The AVA measurement depends on accurate evaluation of LVOT diameter, which has a variability rate of 5-8% thus providing a significant potential for error [4]. Further, co-existing LV dysfunction or valvular jets (e.g. MR, AR) can interfere with precise interpretation of echocardiographic parameters.

In summary, the patient should have received urgent HD on presentation. The work up for systolic murmur would have been more appropriate in an optimized hemodynamic situation. This particular scenario also brings into picture the rising health care costs in the United States, contributed by both additional testing and prolonged hospitalizations. Overall, it is worth concluding that careful physical examination and assessment of the patient is foremost to efficient and 'do not harm' philosophy of medicine.

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