CLINICAL VIGNETTE

Physical Examination: Is it a Lost Art?

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Case

A 72-year-old male came in to clinic to establish care and for annual physical exam. He has no known significant medical or surgical history and no significant family history of cardiopulmonary disease. He also denied any subjective complaints. He denied having previous or current episodes of chest pain, palpitations, syncope, lightheadedness, shortness of breath or cough.

On physical exam the vital signs are within normal limits. On cardiac auscultation, he has a grade III/VI crescendo-decrescendo systolic ejection murmur at the right upper sternal border with radiation to the carotid area. There is also a grade III/VI holosystolic murmur at the cardiac apex. S1 and S2 heart sounds are normal with regular rate and rhythm. Lungs have symmetric lung expansion with normal breath sounds. Peripheral pulses in all extremities are palpable and symmetric.

Transthoracic echocardiogram (TTE) was ordered to confirm the diagnosis and to assess severity of possible valvular disease. The TTE showed critical aortic stenosis with calcification present as well as, mild aortic valve regurgitation and moderate mitral regurgitation.

The LVOT velocity is 0.98 m/s. The peak aortic valve velocity is 5.21 m/s. The peak instantaneous pressure gradient is 108.6 mmHg; mean pressure gradient is 65.0 mmHg; LVOT diameter is 2.00 cm. By the continuity equation, the calculated aortic valve area by Vmax method is 0.59cm² (index 0.32 cm²/m²) and by VTI method is 0.60 cm² (index 0.33 cm²/m²).

Coronary angiogram showed severe diagonal disease otherwise non-obstructive CAD. He subsequently underwent a successful minimally-invasive Aortic Valve Replacement (AVR) with no complications.

Discussion

It has been demonstrated that there is a decline on physical examination skills among physicians. Various reasons for this decline include improvements in technology, time constraints imposed on patient care, and the uncertainty that stems from a lack of confidence in physical examination skills.[1]

There is also a growing body of research that physical examination inadequacies are also a known preventable source of medical errors and adverse events are costly as a result of failure of the physician to perform the relevant examination.[2] Most errors in the physical examination that lead to adverse clinical outcomes are related to not performing an examination.[3]

Despite the clinical relevance of taking a thorough history-taking and a comprehensive physical exam, emphasis on clinical skills education for medical residents and physicians have significantly decreased since the 1960's.[4] Part of the decline in the physician's clinical testing capability can be attributed to weakness in history-taking training and an over-emphasis on instituting organ-based diagnosis.[3]

Furthermore, time constraints have increased our reliance on diagnostic laboratory and imaging tests.[5] In the current era of heightened scrutiny of physicians with an escalated fear of litigation, there has been an increase in the utilization of medical technology which may result in several known detrimental consequences which include a delay in the diagnosis, as well as a higher probability of misdiagnosis as a result of inadequate training and inexperience in the interpretation of various imaging and laboratory tests.[6,7] Studies have consistently demonstrated that history-taking and physical examinations are the most important factors in arriving at a correct diagnosis, whereas laboratory tests and imaging studies play only minor roles.[7]

The perfection of physical examination skills requires continued efforts and practice to increase its diagnostic yield.[7-8] Improvement in physical examination techniques and bedside skills would require a strong emphasis in actual supervised teaching during medical education training. This approach has been shown a dramatic reduction in medical errors and its negative sequelae.[3]

Physical examination is an essential step in the identification of aortic stenosis.[8] Aortic stenosis is often asymptomatic or may cause non-specific symptoms like dyspnea or angina. It is imperative that an accurate diagnosis of aortic stenosis can be established by the primary care physician because aortic stenosis is a potentially curable disease and subsequent cardiac complications can be avoided.[9]

A cross sectional study has evaluated the clinical utility of a bedside clinical prediction rule which has accurately ruled in and ruled out moderate or severe aortic stenosis and the prediction clinical criteria has been interpreted with fair to

moderate reliability by the general medical staff and residents.[10] Based on this study, the absence of murmur radiating to the right clavicle has been shown to effectively rule out aortic stenosis while the presence of 3 or 4 associated findings which include the presence of slow carotid upstroke, reduce carotid artery volume, maximal murmur intensity in the second right intercostal space and reduced or absent second heart sound can effectively rule in aortic stenosis.[10]

In patients found to have a high clinical probability or suspicion for having aortic stenosis, echocardiography has been found to be the most effective means of evaluating aortic valve in normal and diseased states. It is considered a standard of practice for transthoracic echocardiogram to be the sole method to evaluate, confirm and to grade the severity of aortic stenosis and aortic regurgitation.[11]

Conclusion

The systematic utilization of a thorough physical examination accompanied by a comprehensive differential diagnosis directed history can help establish an accurate diagnosis to prevent or minimize further progression and complications of various disease states like aortic stenosis.

Aortic stenosis is a potentially curable cardiac disease and complications can be avoided. Aortic stenosis is often considered to be asymptomatic and on certain cases, present with non-specific symptoms like dyspnea or angina which the patient may not fully disclose to assist the physician to come up with an accurate diagnosis.

The role of physical examination is vital to accurately detect aortic stenosis and other significant valvular lesions. In this clinical vignette, the patient presented with no symptoms and only came in to clinic for his annual wellness exam. If the aortic stenosis clinical findings were missed on physical examination, this may lead to negative repercussions like a delay in establishing the diagnosis which may lead to clinical deterioration and subsequent complications of the aortic stenosis. This patient had critical aortic stenosis, and delaying diagnosis and management can lead to adverse outcomes.

History-taking and physical examination skills are considered to be an integral aspect for all clinical decision-making and their significance should not be disregarded. Continued faculty development is necessary to promote current clinical skills of medical physicians and can help provide proper education on teaching and evaluating clinical physical examination techniques. Physicians should adhere and dedicate themselves to continued improvement of clinical skills and to consistently incorporate these skills in their everyday practice.

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