

Analysis of the pathological severity degree of aortic stenosis (AS) and mitral stenosis (MS) using the discrete wavelet transform (DWT).

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Abstract/Résumé: The heart is the principal organ that circulates blood. In normal conditions it produces four sounds for each cardiac cycle. However, most often only two sounds appear essential: S1 and S2. Two other sounds: S3 and S4, with lower amplitude than S1 or S2, appear occasionally in the cardiac cycle by the effect of disease or age. The presence of abnormal sounds in one cardiac cycle provide valuable information on various diseases. The aortic stenosis (AS), as being a valvular pathology, is characterized by a systolic murmur due to a narrowing of the aortic valve. The mitral stenosis (MS) is characterized by a diastolic murmur due to a reduction in the mitral valve. Early screening of these diseases is necessary; it's done by a simple technique known as: phonocardiography. Analysis of phonocardiograms signals using signal processing techniques can provide for clinicians useful information considered as a platform for significant decisions in their medical diagnosis. In this work two types of diseases were studied: aortic stenosis (AS) and mitral stenosis (MS). Each one presents six different cases. The application of the discrete wavelet transform (DWT) to analyse pathological severity of the (AS and MS) was presented. Then, the calculation of various parameters was performed for each patient. This study examines the possibility of using the DWT in the analysis of pathological severity of AS and MS.

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