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Impact of degenerative mitral annular calcification on left atrial function

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Mitral annular calcification (MAC) has been related to an increase in cardiovascular morbidity and mortality, In many cases mitral annular calcification was also found to be associated with hypertension, diabetes mellitus, ischemic heart disease, valvular disease (i.e. MR, AR, MS, aortic calcification), and enlarged left atrium which related to severity of calcification. Our study was designed to assess the relation between mitral annular calcification and left atrial function which could be verified by decrease left atrial ejection fractions (act as a good predictor for LA function). Study also assessed impact of MAC severity on increase LA linear dimension estimated by M- mode, and LA volumes and function estimated by Simpsons method in 4-chamber view. Echocardiographic finding compared between 2 groups; patient group with mitral annular calcification (80 patients) and control group without mitral annular calcification (20 patients). Then the patients group was subdivided according to severity of MAC into 3 groups; mild, moderate, and severe. The main age of the study population was 62.5 years (range from 50-70 years). In our study female patients were more prevalent; 46 females (57.5%) versus 34 males (42.5%). We noted that there was association between MAC and presences of MR which increased with severity of MAC; however Mitral stenosis was noted to be rare and present in 2.5% of patients who had severe MAC, so there was a strong association between severity of MAC and MS. We also found association between presence of MAC and aortic valve AVC calcification, fifty one percent of MAC patients had aortic valve calcification. While no one had AVC in control group. Our findings suggest that there is a direct proportion between severity of MAC and increased LA in LA filling volumes (LA Volmax, LA Volp, LA Volmini) that estimated by Simpsons method in 4-Chamber view, and noted that the more the increased in LA volumes the more the decrease in LA ejection fractions (LAAEF, LATEF) and stroke volume. We noted that there was significant association between severity of MAC and increased in LA emptying volumes (LAAEV, LATEV). We also found that the more the increased LA emptying volumes, the more the decrease in LA ejection fractions and stroke volume. The significant difference between patient and control groups, and also between patients with different degrees of MAC, regarding all echocardiographic finding, could mean that mitral annular calcification by itself may serve as an important and specific cause of decrease all LA ejection fractions (which act as a good predictor of LA function), Beside we found increase in LA linear dimension measured, and all LA volumes (LA filling volumes, and LA emptying volumes) with severity of calcification. So MAC acts as a good predictor for poor LA function. Conclusion Mitral annular calcification (MAC) is an accidental echo-cardiographic finding, especially above the age of 60 years; it is more common in females than males. Our findings suggest that there is a direct proportion between severity of MAC and increased LA linear dimension, all LA volumes by TTE as well as lower LA function estimated by LA ejection fractions which act as a good predictor for LA functions. Although it is not as accurate as multi-slice computed tomography MSCT and cardiac magnetic resonance imaging CMR, echocardiographic evaluation of mitral annular calcification in elderly could be used as an easy bedside marker for prediction of significant poor left atrial function.

Biography

Ghada Atia is currently specialist in non invasive cardiology and echocardiography at shebin elkom teaching hospital that follow General Authority of teaching Hospitals and Educational Institutes , she hold post graduate master in cardiology from AIN – SHAMIS UNIVERSITY , she authored a documentary in cardiology (TTE 2D echocardiography) about relation between MAC and LA function in 2012 published in national heart journal , and also she authored a documentary in cardiology ECG (importance of lead AVR) , she was one of the speakers in the first house officer annual Egypt conference in 2005 . Also ghada membership in European and Egyptian society of cardiology (MESC).

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