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Research Paper

A case of spontaneous ECHO contrast

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Abstract: Spontaneous echo contrast (SEC), an echogenic swirling pattern of blood flow, is associated with occurrence of thromboembolism. Here we discuss a case of SEC associated with severe mitral stenosis. Aggregation of cellular components of blood in condition of stasis and low flow states causes SEC.

Case Report:

Here we have a 54 year old male known case of rheumatic heart disease severe mitral stenosis. He came to Cardiology OPD with the complaint of dyspnoea on exertion for last 6 months. On examination, the patient was conscious oriented. BP was 102/62 mmHg. PR was 102/min irregularly irregular. His apex beat was in left 5th intercostal space lateral to mid clavicular line, tapping in character. S1 was loud and variable and grade III/IV diastolic murmur was heard in mitral area without opening snap or presystolic accentuation. His ECG was suggestive of atrial fibrillation with controlled ventricular rate (Figure 2). His X ray revealed LA enlargement (Figure 1). Two-dimensional echocardiography revealed Rheumatic heart disease; severe calcific mitral stenosis; giant left atrium; normal left ventricular function and moderate Pulmonary artery hypertension (Figure 3). Fatking Grade 4+ SEC was seen in left atrium (Figure 4). No thrombus, vegetation or effusion was present. The patient was put on oral anticoagulant along with betablocker and diuretic and advised to follow up after one week.

Discussion:

Spontaneous echo contrast refers to dynamic swirling smoke like echoes that are associated with low flow states (Siddiqui et. al., 2001). It is a precursor of thromboembolic events (Daniel et. al., 1988). It occurs in atrial fibrillation, left atrial enlargement, severe mitral stenosis, prosthetic valve, left ventricular dysfunction etc because of stasis of blood or low left atrial appendage velocity (Black, 2000; Fatkin et. al., 1994). In our patient also there was stasis of blood due to atrial fibrillation, giant left atrium and mitral sternosis which might lead to formation of SEC. Mitral regurgitation is, in contrast to mitral stenosis, is protective and somewhat prevents the formation of SEC due to prevention of stasis of blood (Movsowitz et. ai., 1993). Various theories have been out forth regarding the pathophysiology of SEC. Sigel et al in a densitometric study concluded that SEC indicated red cell aggregation (Sigel et. al., 1983). Fatkin et. al., 1995 demonstrated

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that SEC can occur in low shear stress conditions at any level of fibrinogen and haematocrit. In one study, it was concluded that, platelets were involved in the pathogenesis if SEC (Zotz et. al., 2001).

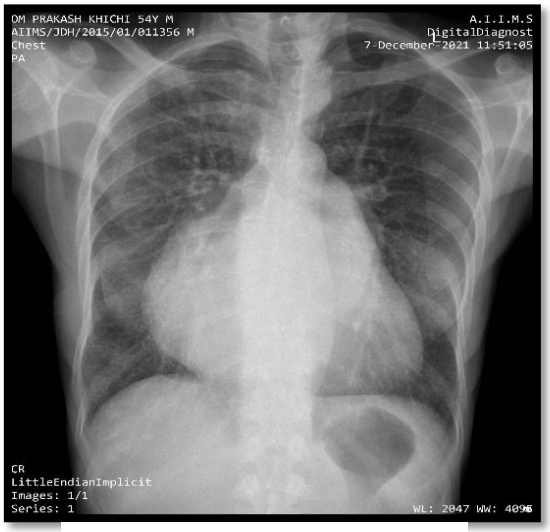

FIG 1: CHEST X RAY PA VIEW

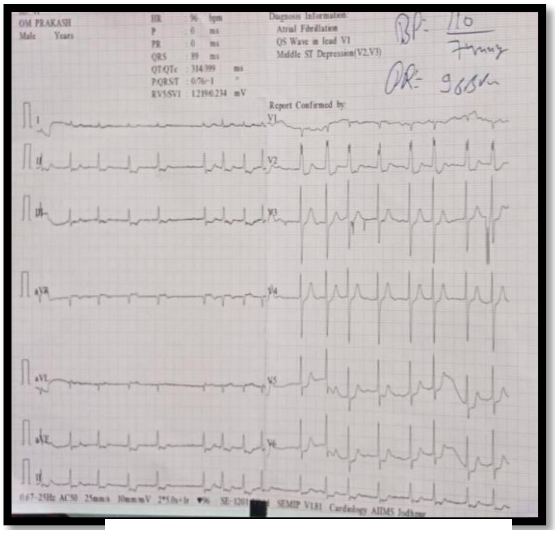

FIG 2: 12 LEAD ECG

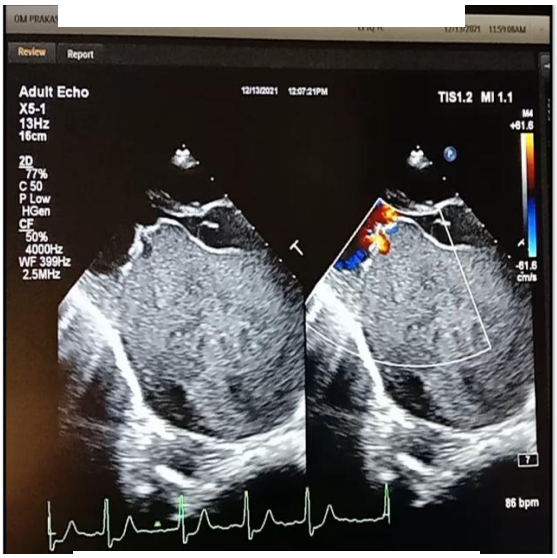

FIG 3: TTE

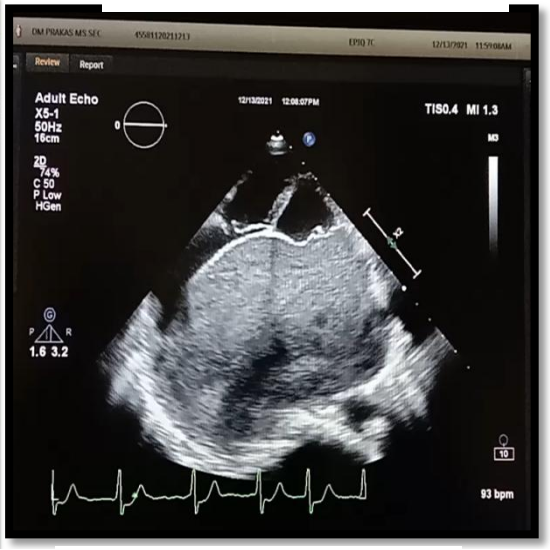

FIG 4: TTE

Although transesophageal echocardiographic imaging better identifies SEC, with the advent of harmonic imaging, even transthoracic echocardiographic (TTE) imaging also identifies SEC in many patients. Severity of SEC is equally important as it correlates with thromboembolic events. Among various gradings, that given by Fatkin et al is used by most as it is a semi quantitative method and correlated well with densitometry analysis. Fatkin' s grading is given as, Grade 0: None (absence of echogenicity); Grade 1+: Mild (minimal echogenicity located in the LA appendage or sparely distributed in the main cavity of the left atrium; may be detectable only transiently during the cardiac cycle; imperceptible at operating gain settings for two dimensional echocardiographic analysis); Grade 2+: Mild to moderate (more dense swirling pattern than grade 1+ but with similar distribution; detectable without increased gain settings); Grade 3+: Moderate (dense swirling pattern in the LAA, generally associated with somewhat

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lesser intensity in the main cavity; may fluctuate in intensity but detectable constantly throughout the cardiac cycle); Grade 4+: Severe (intense echo density and very slow swirling patterns in the LAA, usually with similar density in the main cavity). SEC precedes sludge formation which eventually leads to formation of thrombus. Thus, sludge is more dense than SEC and less dense than thrombus (Lowe et. al., 2014). Optimum medical management is still under debate. found that the integrated backscatter intensity of the left atrial cavity did not change after 1 to 2 months of warfarin therapy, and concluded that this therapy does not influence spontaneous echo contrast (Ito et. al., 1999). Although warfarin therapy is associated with resolution of left atrial thrombus and a lower risk of thromboembolic events, neither warfarin nor aspirin is effective in suppressing left atrial SEC in nonrheumatic atrial fibrillation Zotz et. al., 1994).

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