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Acute Myocardial Infarction in a Young Lady with Mitral Stenosis – Uncommon Presentation of a Common Problem

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Abstract:

Chronic rheumatic heart disease is the major contributor of valvular heart disease in this subcontinent. It can affect all the four valves. Among them mitral valve is affected most of the time. Involvment of the mitral valve could be presented in various nonspecific way like chest pain, palpitation, shortness of breath, difficulty in swallowing, change in voice and so on. There are few causes behind the chest pain. Myocardial infraction is one of the important cause.

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Introduction:

Acute myocardial infarction (AMI) is a major cause of death and disability worldwide. When spontaneous AMI occurs, there is a >90% chance that the underlying aetiology is primarily due to coronary events such as plaque rupture, erosion, or dissection referred to as myocardial infarction (MI) type 1. MI can also occur secondary to an ischemic insult in the absence of overt coronary artery disease (CAD), by an imbalance between myocardial oxygen supply and demand termed type 2 MI.[1] Coronary artery embolism (CE) in which a thrombus arising from sources other than the coronary vasculature propagates into the coronary arteries causing AMI falls in this second category.

Mitral Stenosis (MS) is the most frequent cause of systemic emboli, where the presence of atrial fibrillation (AF) may increase the risk of embolic events. A few data were examined on the incidence of coronary embolism in MS patients with or without AF. The incidence of acute STEMI accompanied by MS is fairly rare cases.[2]

Case report:

Mrs. khursida begum, 38years old, normotensive, nondiabetic, betelnut chewer, housewife, mother of two children got admitted to National Institute of Cardiovascular Disease, Dhaka, through emergency department with complaints of severe retrosternal chest pain for four hours. Chest pain was central in position, compressing in nature, radiating to left arm, jaw and neck, associated with sweating, aggravated by exertion, and not fully relieved by sublingual nitrate spray. Chest pain was not associated with fever, taking deep breath, movement of the chest. There was no history of chest trauma and no family history of coronary artery disease. She also complained of shortness of breath for same duration. Although shortness of breath persisted for last 3 year, initially it was in NYHA Class I but for the last 4 hour it was in NYHA Class IV. Shortness of breath was associated with orthopnoea, paroxysmal nocturnal dyspnoea, palpitation but not associated with swelling any part of the body and not aggravated by exposure to dust and fume. There was no history of joint pain, rash, headache, weakness in any part of the body, pain in the calf muscle and no recent history of air travel. Her past medical history was unremarkable. For shortness of breath she was labelled as bronchial asthma and took medicine for this problem on and off. On general examination, pulse is 108 beat per minute, irregularly irregular, pulsus deficit present, and low volume, blood pressure 90/60mmHg in both hands, JVP raised but absence of a wave.

On precordial examination, apex beat tapping in nature, located in fifth intercostal space, just medial to mid clavicular line and feature of pulmonary hypertension present. On auscultation there was variable intensity of first heart sound , loud pulmonary component of 2nd heart sound, and low pitched, localized, rough, rumbling murmur in apical area, best heard with bell of stethoscope ,breath hold in expiration.

We were thinking that Mrs khursida was suffering from acute coronary syndrome with chronic rheumatic heart disease with atrial fibrillation.

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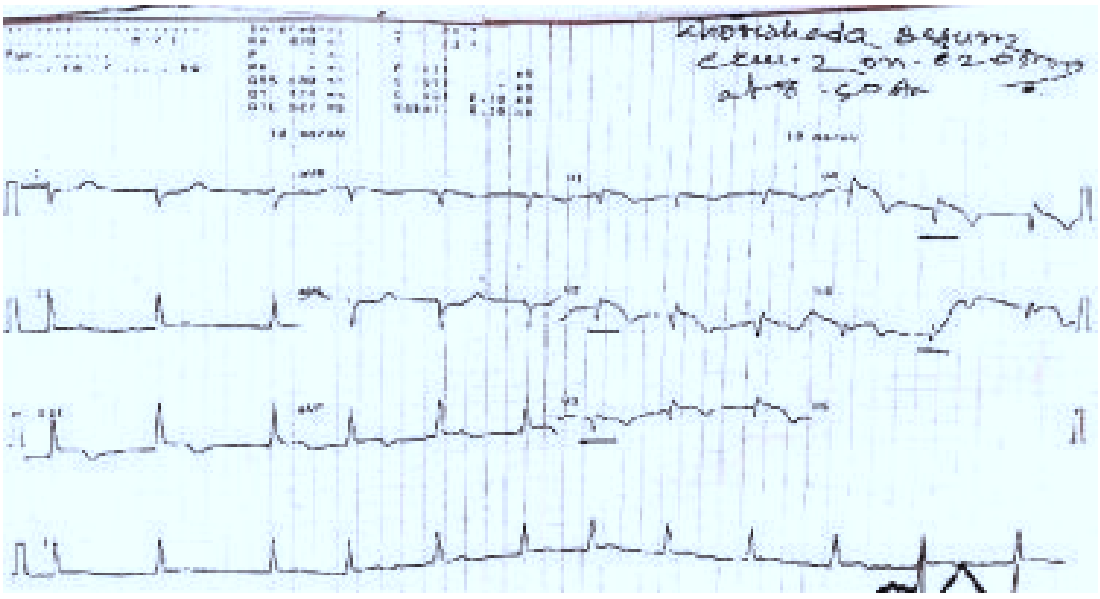
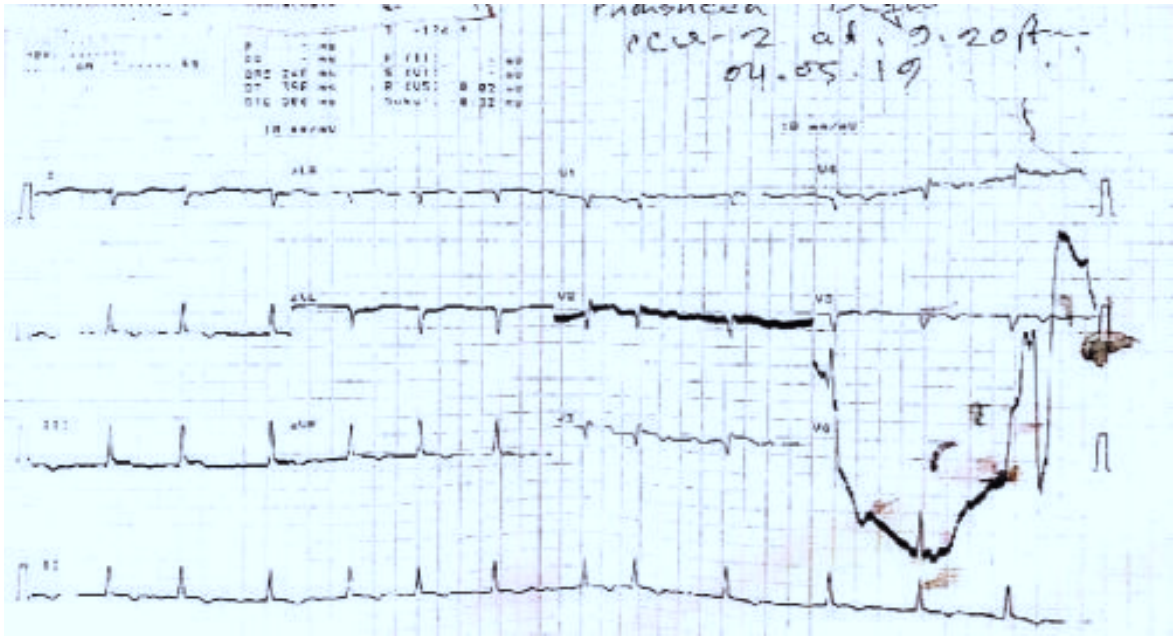


Before thrombolysis



After thrombolysis

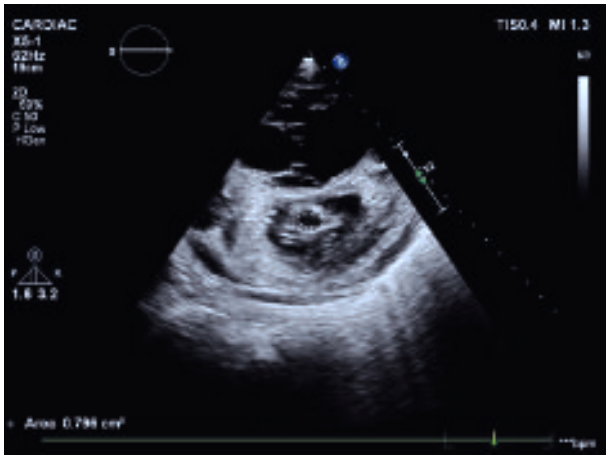
We did emergency ECG, it revealed acute ST elevation myocardial infraction (anterio inferior) with atrial fibrillation. She was thrombolysis with streptokinase

Her base line investigation revealed st Hb :10.7gm/dl; ESR :35mm in 1 hour; WBC: 7000/ml3; platelet :150000/ml3; S. Creatinine :1.3 mg/dL; Na: 129 mEq/L; K: 3.7 mEq/L; Troponin I : 101ng/ml.

Her echocardiogram showed : Anteroseptal wall of the LV hypokinetic; Chronic rheumatic heart disease; Severe mitral stenosis(MVA :0.8cm2); Large thrombus in left atrium (25.3cm2); Severe pulmonary hypertension (PASP 74mmHg)

We did coronary angiogram of the patient, it revealed normal LMCA, LAD and LCX but huge thrombus burden in RCA

Large thrombus in left atrium



Thickening and fibrosis of both leaflet with restricted opening, both commissure fused both commissure are fused

Discussion:

There is three possibilities of chest pain in a patient with mitral stenosis. severe pulmonary hypertension secondary to the pulmonary vascular disease concomitant coronary atherosclerosis coronary obstruction caused by coronary embolization.[3]

Mitral stenosis presenting for the first time as acute STEMI is rare. In the study by Prizel et al, coronary artery embolic infarcts comprised 13% of the autopsy-studied infarcts. Underlying diseases predisposing to coronary emboli included valvular heart disease (40%), cardiomyopathy (29%), coronary atherosclerosis (16%), and chronic atrial fibrillation (24%). Mural thrombi were present in 18 (33%)4. Myocardial infraction, clinically diagnosed in 15 (27%) patients, caused death in 11 (20%). Most emboli involved the left coronary artery and lodged distally, causing infarcts that were usually transmural. Because of their distal location and recanalization, coronary emboli may be a cause of infarcts with angiographically normal coronaries. Thus, coronary emboli are not rare, may produce signs and symptoms indistinguishable from atherosclerotic coronary disease, and by lodging distally in coronary arteries that are usually previously normal, they most often cause small but transmural myocardial infarction.[4]

Charles and colleagues reported that coronary embolism occurs in the left coronary artery in 75% of cases and three-quarters of them present with ST elevation myocardial infarction, whereas the rest present with non-ST elevation myocardial infarction.

Our suggestion is that acute myocardial infarction in this patient with no risk factors for coronary atherosclerosis was of thromboembolic origin, from left atrial thrombi.

Conclusion :

Although rear cause of chest pain in mitral stenosis is myocardial infraction, we should keep in mind to evaluate the cause of chest pain in mitral stenosis patient.

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