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**Septal fluttering** — an important echocardiographic diagnostic sign of anomalous origin of left coronary artery from pulmonary trunk (ALCAPA)

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A 49-year old woman presented with exertional dyspnoea NYHA class-II for last three year, with recent worsening in the past six months. Transrthoracic echocardiography (TTE) revealed dilated left ventricle and atrium with systolic dysfunction (EF = 35%). Apical 4-chamber view showed continous low flow signals (diastolic more than systolic) in the interventricular septum detected by continous Doppler interrogation (Fig. 1, 2). Beside mild mitral regurgitation, and dilated ostium of right coronary artery (RCA), other abnormalities could not be detected. Coronary angiogram showed absent left coronary ostium in aortic sinus, dilated and tortuous right coronary artery (RCA) giving abundant intercoronary anastomoses to left coronary artery (LCA) which was later opacifying the main pulmonary artery in the delayed filling phase thus establishing diagnosis of ALCAPA (Fig. 3). The left coronary ostium arising from the pulmonary trunk, a sign qua non could not be seen on TTE because of poor parasternal short-axis echo window.

ALCAPA is a rare congenital coronary anomaly with an incidence of 1 in 300.000 live births [1–3]. Angiography whether invasive or computed is its important modalities. However, they carry the disadvantage of radiation, contrast exposure, cost, and nephrotoxity. On the other hand, transrthoracic echocardiography (TTE) is an important non-invasive reliable modality which helps in its diagnosis as it gives important information regarding the anatomic, functional, and hemodynamic evaluation.

Abundant intercoronary septal collaterals with continuous flow, particularly in mid-systole and more in diastole were imparting septal fluttering indicating ALCAPA which was subsequently confirmed on angiogram. Such low flow signals differentiate it from the small muscular ventricular septal defects which shunt in systole and RCA to pulmonary artery fistula where connections are epicardial and will have different angiographic appearances. Although LCA originating from the pulmonary artery in parasternal short-axis view is most diagnostic, it may not always be appreciated because of poor widow, and LCA remaining close to the aorta, and therefore septal fluttering in another pointer towards its diagnostic [4]. It suggests left-to-right shunting from RCA via LCA to main pulmonary artery through
intercoronary septal collaterals, and low pulmonary vascular resistance which is in the opposite direction of normal LCA and is prominent in the diastolic phase.

Adult survivors of ALCAPA are often incapacitated by myocardial ischemia, arrhythmias and cardiomyopathy. Survival without surgery (direct transfer of LCA from pulmonary artery, bypass or Takeuchi repair) is exceedingly rare beyond fourth or fifth decade as low pulmonary artery pressure results in coronary steal phenomenon [5]. Some may remain asymptomatic until adulthood due to superdominant RCA, become symptomatic due to fixed myocardial ischemia and coronary steal phenomenon [6]. The more collateral channels exist between RCA and anomalous left coronary system (ALCA), the longer the patient may survive.

**References**


**Figure legends**

**Figure 1.** Apical 4-chamber views showing septal fluttering in diastolic phase (red arrows indicating collaterals)

**Figure 2.** Apical 4-chamber views showing septal fluttering in systolic phase (red arrows indicating collaterals)

**Figure 3.** Dilated tortuous RCA (blue arrow) giving abundant intercoronary anastomoses (red arrow) to left coronary artery (LCA) which was later opacifying the main pulmonary artery in the delayed filling