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Transthoracic 3-dimensional real time echocardiography for the diagnosis of anomalous left coronary artery from pulmonary artery

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Two months baby boy presented with 2 weeks history of poor feeding and fast breathing. No history of febrile illness. Physical examination was body weight 4 kg, length 57 cm, BP 72/45 mmHg, respiratory rate 46 breaths per minute and heart rate 138 beats per minute. He was pink in room air. Peripheral pulses were palpable. He had gallop rhythm on auscultation. Electro cardio gram showed deep Q wave in lead 1, aVL and V4, V5 and V6. Transthoracic echo cardiogram performed using iE33 Philips system. Real Time 3-Dimensional (RT3DE) Echo performed using X-2-7 transducer. Dilated left ventricle with moderately decreased systolic function and ejection fraction 45%. Echogenic papillary muscles and mitral valve chordae with moderate to severe mitral valve insufficiency. Dilated left atrium was prominent right coronary artery arising from right coronary sinus of aorta. Left Coronary Artery (LCA) origin could not be confirmed from the aorta but there was communication between Left Anterior Descending Artery (LAD) and Main Pulmonary Artery (MPA). Real time 3D echo and full volume as well as full volume color images were obtained. The origin of left coronary artery from the main pulmonary artery was clearly demonstrated and the color flow from LCA to MPA on RT3DE. Further cropping of the MPA clearly showed the orifice of the LCA origin situated in the posterior pulmonary sinus of pulmonary valve. Hospital course based on the RT3DE findings the baby was accepted for cardiac surgery without being subjected to cardiac catheterization. The above findings were confirmed in the operating room. Patient had successful Anomalous Left Coronary Artery from Pulmonary Artery (ALCAPA) repair and discharged in a week time. ALCAPA is a rare but clinically significant form of congenital heart disease, usually causing myocardial dysfunction and heart failure in infancy. This anomaly occurs in about 1 in 300,000 children (0.5% of those with congenital heart disease but remains one of the more common causes of pediatric myocardial dysfunction. Correct diagnosis of ALCAPA in a timely manner is important for patient's management, regardless of the age at presentation. Cardiac catheterization with angiography has traditionally been the imaging modality used for the diagnosis. However, as echocardiographic techniques have improved, echocardiography can provide diagnostic imaging without the need for more invasive imaging in ALCAPA. Although age-related differences in echocardiographic markers for ALCAPA have been described but use of 3D echocardiography for the confirmation of ALCAPA in infants has not been reported. Transthoracic 3-dimensional echocardiography is feasible and reliable non-invasive imaging modality for diagnosis of ALCAPA in infants.

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