Isolated and severe left main coronary stenosis in the young: a rare angiographic entity

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DESCRIPTION

A male patient in his early 20s with recent onset of crescendo angina was referred for coronary angiography (CAG) in view of his young age and significant symptoms. His risk factors included tobacco use and dyslipidaemia (total cholesterol 240 mg/dL, low-density lipoprotein (LDL) 170 mg/dL, high-density lipoprotein (HDL) 32 mg/dL and triglyceride 190 mg/dL). He was non-diabetic with normal fasting blood sugar and glycosylated haemoglobin levels, and family history of premature coronary artery disease (CAD) was negative. General, physical and cardiovascular examinations, resting ECG and two-dimensional echocardiogram were normal. CAG revealed 80–90% left main (LM) stem stenosis (figure 1). Left anterior descending, circumflex and right coronary artery were normal with right dominant system (figure 2). During contrast injection, the patient experienced an episode of chest pain which responded to sublingual nitrates. Repeat cine after administration of nitrates showed no change of stenotic segment, ruling out spasm.

Isolated and severe LM involvement is a rare angiographic entity reported in <0.5–1% of patients undergoing cardiac catheterisation¹; LM stenosis when present is usually accompanied by a disease in other epicardial coronary arteries with a prevalence of 5–7% in those undergoing CAG.² Atherosclerosis is the most common aetiology reported by studies involving histological examination,¹ and appears to be the most likely cause in our patient with a history of tobacco use and an atherogenic lipid profile. Diseases rarely affecting LM in isolation are polyarteritis nodosa, systemic lupus erythematosus and acute rheumatic fever. Congenital causes include LM stem stenosis, atresia and hypoplasia. Extrinsic compression

Figure 2 Normal and dominant right coronary artery.

by tumour, aneurysm and patent ductus arteriosus, trauma, spasm and prior surgery are other rare causes.^{1,3}

CAD in young patients under 40 years of age is increasing among the South Asian population, particularly in Indians. Genetic predisposition and rapid acquisition of traditional risk factors as a result of urbanisation seem to be the major causes.

Learning points

- ▶ Significant left main (LM) disease is an expression of the most severe form of coronary artery disease (CAD) as it has the potential to compromise blood flow to approximately 75–100% of the left ventricle depending on the coronary dominance thereby placing the patient at high risk for life-threatening events. Unstable angina is the most common presentation, and ECG and two-dimensional echocardiogram may be entirely normal.
- ▶ Isolated and significant LM stem stenosis in the absence of associated disease in other epicardial coronary arteries is a rare angiographic manifestation. Atherosclerosis is cited as the most common aetiology.
- ▶ The gold standard for diagnosis is coronary angiography; features compatible with LM disease are abrupt pressure damping and loss of normal ostial reflux of contrast; repeat cine angiogram after administration of nitrates is necessary to rule out LM spasm.
- ▶ Cigarette smoking, tobacco use, dyslipidaemia and family history of premature CAD are the principal risk factors for CAD in young patients <40 years of age among the South Asian population, particularly in Indians.

Figure 1 Anteroposterior caudal view with right anterior oblique angulation showing isolated and severe left main stem coronary artery stenosis.

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Predominant risk factors present in this subset of the population are cigarette smoking, tobacco use, a more atherogenic dyslipidaemia (elevated LDL-cholesterol and triglycerides and low HDL) and family history of premature CAD. Hypertension and diabetes are less commonly encountered compared with the older population. Although CAD in the young is reaching epidemic proportions in India, such critical LM stenosis is infrequently seen and is definitely perturbing from a public health perspective.

Contributors PJB performed the coronary angiogram and managed the patient during hospitalisation. NB initially attended the patient in his outpatient department and referred him for coronary angiography. Both authors wrote and revised the manuscript.

Competing interests None.

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