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Arterio - Sinusoidal Coronary Cameral Fistulae from the Left Coronary Artery to the Left Ventricle in an Elderly Male

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Abstract

Coronary-cameral fistulae are rare vascular anomalies involving the coronary arteries. Most coronary cameral fistulae are detected incidentally during coronary angiography. Drainage into the left ventricle is quite uncommon. Clinical presentation depends upon the haemodynamic significance of the anomaly. We report a case of multiple coronary cameral fistulae from the left coronary artery draining into the left ventricle in an elderly male, the symptoms of which were probably masked by the limitation of activities induced by significant peripheral arterial occlusive disease.

Keywords : Coronary cameral fistulae, Arterio-sinusoidal

Case

A 64-Year-Oldman Was Evaluated For Intermittent Claudication Of 1 Year Duration Involving Both The Lower Limbs. There Was No History Of Effort Angina, Dyspnoea On Exertion, Palpitations Or Syncopal Episodes. There Was History Of Systemic Hypertension For 5 Years And Smoking Sixty Pack Years Of Cigarettes. There Was No History Of Diabetes Mellitus, Congenital Heart Disease, Trauma To The Chest Or Invasive Procedures Involving The Heart. Clinical Examination Was Significant For Absent Lower Limb Pulses And A Wide Pulse Pressure [Upper Limb Blood Pressure 160/60 Mm Hg]. ECG And Echocardiogram Were Found To Be Normal. Invasive Peripheral Angiography Done For The Evaluation Of His Symptoms Revealed Peripheral Arterial Occlusive Disease Involving Bilateral Common Iliac Arteries, For Which He Underwent Balloon Angioplasty. Selective Coronary Angiogram Of The Left Coronary Artery Revealed Immediate Contrast Opacification Of The Left Ventricular Cavity Through Multiple Tiny Fistulae From The Left Anterior Descending Artery Suggestive Of Coronary Cameral Fistulae [Fig. 1a,B]. The Coronary Sinus Appeared To Be Of Normal Size. There Was No Significant Coronary Stenosis. Since The Patient Was Currently Asymptomatic For The Coronary Fistulae, It Was Decided To Keep Him Under Observation To See If Any Symptoms Appear Following Treatment For Peripheral Vascular Disease and Subsequent Increase In Physical Activities.

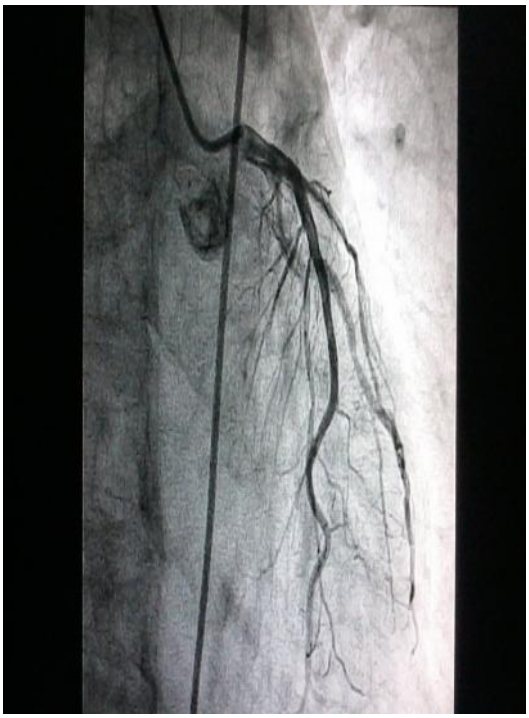

Fig 1a.Transfemoral selective coronary angiography of left main coronary artery [RAO 20 Caudal 20] showing contrast opacification of left coronary arterial system

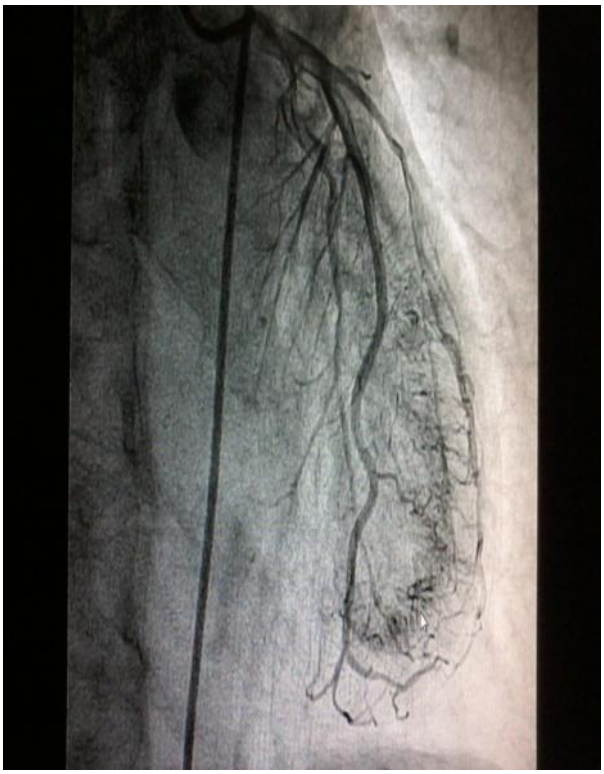

Fig 1b . Multiple vascular channels draining into the left ventricle visualized before the venous phase, opacifying the left ventricular cavity

Discussion

Coronary artery fistula involves a communication between a coronary artery with either a chamber of the heart (coronary-cameral fistula)or any segment of the systemic or pulmonary circulation (coronary arterio-venous fistula), bypassing the myocardial capillary network. Coronary-cameral fistulae may be congenital or acquired. Acquired causes include trauma and iatrogenic interventions such as pacemaker implantation, endomyocardial biopsy, coronary artery bypass grafting, or coronary angiography. Congenital coronary artery fistulae may occur as an isolated finding orin association with cyanotic oracyanotic congenital heart diseases including Tetralogy of Fallot and coarctation of aorta.

Coronary cameral fistulae have been reported in approximately 0.08% to 0.3%of patients undergoing diagnostic coronary angiography [1]. They may arise from any branch of the coronary arterialtree, most frequently from the right coronary artery [60%] followed by the left anterior descending artery [35%]. In a small proportion of cases, fistulae may arise from more than one coronary artery. In congenital fistulae, drainage is most often to a low pressure cardiac chamber such as the right ventricle, right atrium, or the pulmonary arteries. Communication into the left ventricle (LV) is extremely rare.

Three Levels Of Coronary – Cameral Shunting Are Described: (A) The Arterial Luminal Type (The Most Common), In Which A Conduit Coronary Artery Enters The Cardiac Chamber Directly; (B) The Arteriosinusoidal Type, In Which The Communication Is Through A Myocardial Sinusoidal Network; And (C) The Arteriocapillary Type, In Which The Arterial Vessel Drains Into The Capillaries [2,3,4].

Clinical presentation depends on the haemodynamic significance of the anomaly.Coronary artery fistulae are commonly detected as an incidental finding in asymptomatic individuals. The physiologic impact of a fistula depends upon the site of origin and drainage, as well as the size of the connection. The fistulae to the left ventricle are physiologically similar to chronic aortic regurgitation. Multiple fistulae can produce exertional angina secondary to coronary steal phenomenon [as the normal circulation offers a greater resistance to flow than the fistula]and diastolic overload.Exertionaldyspnoea is more likely to predominate in those with a single fistula[5,6].

Coronary cameral fistulae have been reported to cause myocardial infarction,congestive heart failure, arrhythmias, and aneurysmal rupture of affected vessels. Such complications are commoner in the elderly, partially due to the progressive enlargement of these fistulae secondary to abnormal haemodynamics.

Epicardial and endocardial surgical ligation or percutaneous endoluminal procedures such as coil embolization are the treatment options in symptomatic patients. The choice of the procedure depends upon the size and location of the fistulae. Diffuse fistulae pose additional challenge to the available treatment options, and are managed medically. Conflicting evidence from case reports suggest that nitrate therapy may exacerbate ischemia by increasing leakage to the left ventricle [7].

In our case, although the patient was asymptomatic for the fistulae, the wide pulse pressure recorded during catheterization suggests the potential hemodynamic significance of the fistulae. Symptoms related to the fistulae may have been masked by the limitation of activities induced by debilitating claudication pain. However it is possible that symptoms related to the fistulae may be unmasked following treatment of peripheral vascular disease. No effective treatment options exist for such diffuse fistulae.

Conclusion

Coronary-cameral fistulae are rare vascular anomalies involving the coronary arteries. Most coronary cameral fistulae are detected incidentally during coronary angiography, as was in our case. The wide

pulse pressure recorded during catheterization suggests the potential hemodynamic significance of the fistulae, the symptoms related to which may have been masked by the limitation of activities induced by peripheral arterial occlusive disease. The drainage into the left ventricle is quite uncommon and has rarely been reported.

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