Spontaneous Left Main Coronary Artery Dissection: An Enigmatic Cause of Acute Coronary Syndrome

Deepak Kumar Mishra¹, Shalima Gautam², BK Goyal³

Abstract
Coronary artery dissection is a rare cause of acute coronary syndrome with affection of Left Main Coronary artery in such case is rarest of rare in clinical practice. This rare diagnosis is rarely thought of as a cause of STEMI. Routine Thrombolysis in such cases can be a double edged sword by increasing the progression of dissection and can be catastrophic!

Introduction
Plaque rupture and plaque erosions are the two major conventional mechanisms which have been implicated as a cause of Acute Coronary Syndromes. Though iatrogenic coronary artery dissections are part of balloon angioplasty procedure; spontaneous coronary arterial dissection is a relatively new entrant and it is of significance both as a cause of ACS and due to the fact that managing is a tricky situation due to lack of consensus data.

Case Report
A 55 year old male presented with complaint of Exertional chest pain NYHA class 3 symptoms of 6 weeks duration which has aggravated for last 1 week. He was already on medical management for coronary artery disease for last 10 years. His ECG was normal with no ST-T changes. 2D echo showed preserved LV function with no RWMA. Routine blood chemistry was non-contributory. His coronary angiogram was done which showed spontaneous dissection of LMCA with triple vessel disease (Figures 1 and 2). LAD has 80% stenosis. LCX has 90% stenosis. RCA was 95% stenosed in proximal segment followed by 100% occlusion (Figure 3). The distal segments were filled by collaterals from left coronary artery system. Considering the recent onset and aggravation of chest pain (unstable angina) and the severity of coronary artery disease the patient was sent for CABG surgery. He underwent off pump surgery with 3 grafts (LIMA – RIMA ‘γ’ graft to OM, SVG to PDA.) and is doing well in follow ups.

Discussion
Coronary artery dissection is an underdiagnosed, unsuspected cause of acute coronary syndrome (unstable angina, NSTEMI, STEMI). To further complicate the matter there is limited literature available regarding its exact etiopathogenesis and treatment strategy. Roughly the incidence of this problem is about 0.15%. The presentation ranges from asymptomatic one to catastrophic acute heart attack, cardiogenic shock and even sudden cardiac arrest. Pretty H was the first one to report about coronary artery dissection way back in 1931.

Risk factors for coronary artery dissection is almost same as that of aortic dissection including atherosclerosis, pregnancy and peripartum period, hypertension, medial abnormalities eg Marfan’s syndrome, Ehlers Danlos syndrome, Lysyl Oxidase deficiency, eiosinophilic vasculitis, connective tissue disorders, weight bearing exercises, drugs for example cocaine, cyclosporine, OCP’s, Fenfluramine, 5-flourouracil. These drugs probably are responsible by causing hypertension or sympathetic stimulation or by altering the estrogen-progesterone balance which affects the media of the vessels. One very astonishing point to be note is that coronary artery dissection is more commoner in females as compare to males and that too in pregnancy and postpartum period.

Pathogenesis: The dissection plain is commonly between intima and media (atherosclerotic dissections) or it can be between median and adventitia of the artery (Pregnancy and cocaine induced) with or without infiltrations of eosinophils. Eosinophilic degranulates...
Other diagnostic modalities include IVUS (intravascular ultrasound). Optical Coherence Tomography (OCT) does not have any role because of fear of further propagating the dissection flap as imaging with OCT involve clearing the field with dye injection which might abruptly close the artery with catastrophe. Many a times dissection is noted as an incidental finding and those cases without flow limitation and no chest pain (Chronic dissections) as well as ECG’S Changes are the candidates for conservative management.

**Treatment:** depends upon the clinical condition of the patient. Asymptomatic (Incidental) presentation medical management is as good as PCI or CABG with excellent long term survival.(ref 4)

All ACS patients should be given the protocol based therapy consisting of Aspirin, Clopidogrel / Prasugrel, Statin, Beta blocker, ACEI, Calcium channel blocker should be given if spasm of coronary artery is there. Supportive management will include inotropes. Patients with active ongoing ischaemia whether chest pain or silent ones (EGCs changes) need some form of active intervention (PCI/CABG).Patients with heart failure/ Cardiogenic shock will need either immediate Stenting (with or without IVUS depending on the set up and clinical skill of the operator) or urgent CABG. All three forms of therapy viz. medical management, PCI and CABG has survival benefit is coronary artery dissection patient.

**Controversies in the Medical Management**

**Thrombolytics** might aggravate the situation3 by dissolution of thrombus in false channel with introduction of flow in the same and further propagation. **Thrombolytics are relatively contraindicated in pregnancy due to Uteroplacental haemorrhage and hence catheterization with the aim of PCI and flap sealing of dissection is the strategy with all precautions including the lead shield to protect the fetus.

**Gp2b 3a Inhibitors:** they also have controversial role probably by expanding the haematoma of arterial wall as well as thrombus clearance further paving way to dissection flap.

**Statins:** Should be avoided in pregnant patients in whom dissection is seen as it is teratogenic.

**Koller et. al4** has mentioned the possible role of steroid and immunosuppressive therapy in his report of three patients with good result.

There is an ongoing registry discovery by Fontanelli A et. al5 in Italy which will throw further light on this problem and probably will enlighten us further as far as controversies regarding various aspects of coronary artery dissection.

**References**


