

Percutaneous Coronary Intervention in A Patient With Dextrocardia

Ashwin Paul Kooran¹, Muhamed Shaloob²

¹(Cardiology Department, Metro International Cardiac Centre, India)

²(Cardiology Department, Metro International Cardiac centre, India)

Abstract: *Situs Inversus with dextrocardia is a rare congenital anomaly. Due to abnormal location of heart , coronary origin anomalies and mirror image pattern of aortic arch, performing percutaneous coronary interventions in such patients becomes challenging. We hereby report a case of a 61 year old gentleman who presented with Non ST Elevation Acute coronary syndrome. A coronary angiography and multivessel percutaneous coronary intervention(PCI) was done. The technical details and challenges faced are hereby discussed.*

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I. Introduction:

Dextrocardia with situs inversus is a congenital anomaly seen in about 1 in 8000 to 1 in 10000 live births (1). The incidence of coronary artery disease in these patients are similar to normal population (2). Proper catheter selection and catheter manipulation for coronary cannulation is of utmost importance in such cases. Modification of angulation of machine is also required for a smooth procedure. We describe a case of dextrocardia with worsening effort angina requiring coronary angiography and multivessel percutaneous coronary intervention .

II. Case Report:

A 61 year old gentleman, a known diabetic presented with complaints of severe chest pain since five hours prior to admission. On examination, apical impulse was on the right side with normal S1 and S2. No S3/S4 or murmur was appreciated. ECG done revealed an inverted P wave in limb leads I and aVL and upright P and R waves in lead aVR . Prominent S waves were seen in left sided chest leads. ECHO done revealed reciprocal dextrocardia with normal Left ventricular function. Troponin T levels were elevated confirming the diagnosis of Non ST elevation MI

Loading doses of aspirin 325 mg and clopidogrel 600 mg was given and patient underwent coronary angiography. Angiography was done through the right radial route . The left main coronary artery arising from right side was cannulated using Extra back up(EBU) 3.0 catheter in the Left anterior oblique(LAO) view. Proximal to mid Left anterior descending (LAD) artery had 80 % stenosis. Left circumflex artery(LCX), was disease free. In view of difficulty in cannulation of right coronary artery(RCA), right femoral approach had to be used for cannulation. RCA cannulation was done using Judkin Right(JR) 3.5 diagnostic catheter in the right anterior oblique(RAO) view. There was a critical 99% stenosis in mid RCA. Synae images were used for reference for further cannulation of coronary arteries at time of angioplasty.

Angioplasty of RCA was done first. 6 French JR3.5 guiding catheter was used to cannulate RCA. Fielder FC PTCA guidewire was used to cross the critical stenosis. Predilatation was done with 2.0mm x10 mm predilatation balloon. Xience Prime LL 2.75 mmx38 mm was deployed in mid to distal RCA and Xience Prime 3.0 mmx23mm was deployed in proximal to mid RCA(overlapping). Post dilatation was done using NC Sprinter 3.5x12mm balloon.

6F EBU guiding catheter was used for angioplasty of LAD. Lesion in LAD was crossed using Fielder FC PTCA wire. Predilatation was done using 2.0x10 mm predilatation balloon. Xience Xpedition LL 2.75x38 mm stent was deployed in Proximal to Mid LAD. Post dilatation was done using 3.5 mmx12 mm NC Sprinter balloon. Good end angiographic result was achieved.

III. Discussion:

The prevalence of coronary artery disease is similar in patients with dextrocardia and in general population. As the angiographic orientation of coronary arteries are different and as manipulation of coronary catheters differ, it becomes challenging for interventional cardiologists to perform PCI in these patients. Patients

are usually asymptomatic and dextrocardia is diagnosed incidentally as in our patient who was never diagnosed to have dextrocardia prior.

Changes in angiographic image acquisition is necessary for selective cannulation of coronaries and interpretation of images as the coronary artery ostium and relation to sinuses are mirror images of normal anatomy. On reviewing literature only one case report of PCI done in patient with dextrocardia has been reported from kerala. Moreover number of reported cases of multivessel PCI done are very few.

Moreyra et al., found multipurpose catheters superior to Judkins catheters for PCI in patients with dextrocardia(3).Angioplasty using right and left radial artery have also been mentioned.In our case EBU catheter was used for cannulation of left main coronary artery and JR 3.5 catheter used for cannulation of right coronary artery ostium.RCA origin being deep down was difficult to cannulate and anticlockwise rotation of JR3.5 catheter helped in engaging. Synae images taken at time of angiography were used as reference and this helped in cannulation at time of angioplasty using guiding catheters.

Goel et al., suggested a double inversion technique with left/right view reversal (RAO instead of the classical LAO & vice versa). In our case simple right and left reversal was used for orientation(4).

Few inferences we made from our case was as follows

- a) Femoral access was better suited for cannulation and performing PCI in case of multivessel involvement.
- b) Reverse clockwise rotation was used to cannulate the right coronary artery.
- c) Simple right and left reversal of views were done for PCI.

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IMAGE

Image 1: Coronary angiogram of Left coronary system(Left Anterior oblique,cranial view) showing proximal to mid 80% stenosis.

Image 2: Coronary angiogram of Right Coronary Artery in Right Anterior Oblique view showing critical 99% stenosis in Mid RCA.

Image 3: Post PCI image of RCA after deployment of two drug eluting stents in proximal to distal RCA.

Image 4:Post PCI image of LAD after deployment of one drug eluting stent in Proximal to mid LAD.