Clinical and Angiographic Profile of Coronary Artery Ectasia in Central Kerala.

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Abstract

Background: Coronary artery ectasia is considered an uncommon angiographic finding with varying patterns of presentation and prevalence. This study was designed to study the prevalence of coronary artery ectasia in patients undergoing coronary angiography and to evaluate the clinical and angiographic profile in these patients.

Materials and methods: Consecutive patients undergoing elective as well as emergency coronary angiography from March 2009 to February 2010 in the Department of Cardiology, Government Medical College, Kottayam and having angiographically proven coronary ectasia with or without obstructive coronary artery disease were included in the study.

Results: Of the 1210 angiograms retrospectively analyzed, ectasia without flow limiting CAD was found in 71 patients, a prevalence of 5.8%. The mean age in patients with isolated coronary ectasia was 45.5 years. A predominance of the male sex was observed (87%). Right coronary artery was the most commonly involved vessel followed by left anterior descending artery, left circumflex and left main coronary artery. Majority of the patients had traditional risk factors for atherosclerosis indicating that coronary ectasia is most commonly associated with atherosclerotic vascular disease.

Conclusions: Our study showed a relatively high angiographic prevalence of isolated coronary ectasia (5.8%). Coronary ectasia may not be considered completely innocuous, since it is associated with atherosclerotic vascular risk factors and occurrence of coronary events including angina and myocardial infarction.

Introduction

Coronary artery ectasia (CAE) has been observed by pathologists and cardiologists for more than two centuries. After its first description by Morgagni¹, this not so infrequent form of coronary artery disease has puzzled the clinicians regarding its cause, clinical sequelae and treatment.

Coronary artery ectasia, also known as dilated coronopathy, is a relatively rare entity with an estimated incidence of 0.3 – 4.9%. This pathological entity is defined as dilatation of a part or whole of the coronary artery 1.5 times or more the diameter of an adjacent normal segment. It is commonly associated with atherosclerotic coronary artery disease (CAD) and therefore also considered as a variant of coronary atherosclerosis. In the largest series from the CASS registry, Swaye et al² found CAE in 4.9% of more than 20,000 coronary angiograms they reviewed. The incidence of CAE in an Indian patient cohort with ischaemic heart disease has been reported to exceed 10%.³

Previous studies have shown pure coronary ectasia not to be completely innocuous with 50% of patients presenting with myocardial infarction (MI) and many having angina. Markis et al.⁴ found a 15% mortality rate after 7 years, which at the time of their publication was equivalent to the mortality rate of medically treated triple vessel disease. Current literature, also suggests that arteries with isolated ectasia are subject to slow flow with thrombus formation, vasospasm and spontaneous dissection.

All three coronary vessels can be affected by CAE, but in 75% of patients an isolated artery is ectatic.⁵ In patients with concomitant coronary
artery disease, the proximal and mid segments of the right coronary artery are the most frequently involved, followed by the left anterior descending artery and the circumflex artery.2,5

A well-established treatment protocol is not available and the existing recommendations include the use of anticoagulants, antiplatelets and coronary vasodilators, based on anecdotal reports.

**Aim of study**

To study the prevalence of coronary artery ectasia in consecutive patients undergoing coronary angiography and to evaluate the clinical and angiographic profile in these patients.

**Study Population**

Patients undergoing elective as well as emergency coronary angiography from March 2009 to February 2010 in the Department of Cardiology Government Medical College, Kottayam were included for the study. The hospital receives patients from five districts in Central Kerala with a total drainage population of 1 crore.

**Inclusion Criteria**

Consecutive patients undergoing elective as well as emergency coronary angiography from March 2009 to February 2010 in the Department of Cardiology, Government Medical College, Kottayam and having angiographically proven coronary ectasia, defined as dilatation of a part or whole of the coronary artery 1.5 times or more the diameter of an adjacent normal segment, with or without obstructive coronary artery disease.

Patients who had already undergone previous coronary revascularization procedures (PTCA or CABG) were excluded from the study.

**Methods**

Patients fulfilling inclusion criteria and who provided informed written consent for the study were subjected to a detailed clinical evaluation. Standard 12- channel electrocardiography and transthoracic echocardiography were done in all the patients. Baseline laboratory investigations including blood sugar, renal parameters and fasting lipid profile were carried out in all. Coronary angiograms were critically evaluated by two independent observers to identify the coronary artery anatomy and the presence of any ectasia as well as obstructive lesions in each vessel.

Classification proposed by Markis’ was used to describe the type of ectasia. Type I - diffuse ectasia of two or three vessels, Type II- diffuse disease in one vessel and localized disease in another vessel, Type III- diffuse ectasia of one vessel only, Type IV- localized or segmental ectasia.

After the angiography, patients were followed up for a period of 1 year to assess the clinical status. The frequency of symptoms and functional status were assessed during this period.

**Results**

Of the 1210 angiograms retrospectively analyzed, ectasia without flow limiting CAD was found in 71 patients, a prevalence of 5.8%. The age range was 28 to 72 years with a median age of 54 years. A predominance of the male sex was seen (60, 87%). Of 820 males who underwent CAG, 60 (7.3%) had CAE. This contrasted with only 11 (2.8%) of 390 women studied.

Among these, 56 were associated with atherosclerotic coronary artery disease, i.e. more than 50 percent diameter stenosis in one of the major epicardial coronary arteries (Group A) and 15 not associated with coronary artery disease (Group B)(Figure 1).
The atherosclerotic risk profile in the study population is shown in Figure 3, comparing Group A and Group B patients and patients with obstructive CAD without coronary ectasia.

The vessel distribution and pattern of involvement is shown in Figure 4(a) and 4(b). Right coronary artery was the most commonly affected vessel (63%) followed by left anterior descending artery (36.6%) and left circumflex artery (35.2%). The left main coronary artery was involved in only 2 (2.8%) patients. Commonest type of ectasia was Markis Type II, observed in 55% cases.

Discussion

Coronary artery ectasia is considered an uncommon angiographic finding with varying patterns of presentation and prevalence. A number of studies and analysis have been conducted with a view to understand this entity and try to establish an effective line of management. Some of the mechanisms postulated to explain ectatic transformation include arteriosclerotic disease resulting in weakening of media and post-stenotic dilatation with post stenosis flow velocity augmentation. According to Tunick et al., discrete ectasia develops exclusively in the presence of tight...
stenosis. In our study, however, we identified patients with isolated discrete ectasia without significant co-existing stenosis. According to most investigators, age did not seem to have any additional influence in the distribution of ectasia. Sharma et al found no difference in the nature of ectasia in older or younger patients. Our study concurs with the above finding in that no specific difference was seen in the pattern of ectasia between the various age groups. Most of our patients belonged to the age group of 40 - 60 years which is more prone to CAD.

In their series, Demopoulos and Harikrishnan found the RCA to be the most commonly involved vessel followed by the LCX and later the LAD. As in the above studies, ectasia of diffuse nature was predominantly seen in RCA with LAD showing predominantly the discrete form of ectasia.

A significant proportion of our patients (n=32, 25%) at presentation either had an acute myocardial infarction or a history of myocardial infarction while 65 (49%) patients had angina. These compare well with the 39% of angina and myocardial infarction reported by Demopoulos et al. This underscores the observation that coronary ectasia may not be a benign condition.

**Conclusion:**

Our study shows a relatively high angiographic prevalence of isolated coronary ectasia. Right coronary artery was the most commonly involved vessel by ectasia followed by left anterior descending artery, left circumflex and left main coronary artery. Coronary ectasia in the absence of flow-limiting coronary artery disease may not be completely innocuous, since there is an association with angina and myocardial infarction.

Majority of the patients had traditional risk factors for atherosclerosis indicating that coronary ectasia is most commonly associated with atherosclerosis. There were no significant differences in age and prevalence of each coronary artery risk factor between patients with isolated coronary ectasia and those with combined ectasia and obstructive CAD (Groups A and B).

The uneventful follow-up course in our small cohort of patients necessitates a larger study and a longer follow-up period with a view to review the management strategies.

**Study limitations:**

The limitations of our study include the relatively small number of patients followed up and lack of angiographic follow-up.

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**References**