Case report - Coronary

Left anterior descending artery arising as a terminal extension of posterior descending artery (a rare coronary artery anomaly)

Faruk Cingoz*, Hakan Bingol, Ahmet Turan Yilmaz, Harun Tatar

Cardiovascular Surgery Department, Gülhane Military Medical Academy, Ankara, Turkey

Received 10 July 2003; accepted 1 September 2003

Abstract

Several types of left anterior descending artery anomalies have been detected. In these anomalies, left anterior descending artery usually originates from the right coronary artery or right sinus of Valsalva. A case of left anterior descending artery arising as a terminal extension of posterior descending artery presented. This anomaly seems rather rare.

© 2003 Elsevier B.V. All rights reserved.

Keywords: Coronary angiography; Anomalous coronary pathway; Left anterior descending artery

1. Introduction

Coronary artery anomalies occur in approximately 0.2–1.2% of the adult population [1,2]. The origin of the left anterior descending artery from the right coronary artery (RCA) is relatively rare. The case we present is a left anterior descending artery (LAD) anomaly. In this case, the LAD artery arises as a terminal extension of the posterior descending artery (PDA). To our knowledge there is no published case report of this anomaly.

2. Case report

A 51-year-old man was admitted to our hospital with stable angina. The patient was a heavy smoker and he had a 1-month history of chest pain on exertion. Physical examination was normal. Electrocardiogram (ECG) and chest X-ray appeared normal. Effort ECG showed ST segment depression in leads I, aVL, V5–6. Cardiac catheterization was performed via the femoral artery approach. The left ventricular end-diastolic pressure was 8 mmHg. Left ventriculography was normal with an ejection fraction of 65%. Selective left coronary arteriography revealed only a circumflex (Cx) artery. The LAD artery was absent and the area that is normally perfused by the LAD artery was avascular and free of collateral circulation (Fig. 1). There was 70% stenosis at middle-portion of the Cx artery. The selective right coronary arteriogram then opacified both the RCA and the LAD simultaneously. The RCA had 50% stenosis in the distal one-third portion and LAD was arising just after the PDA. Branching and distribution of the LAD was normal and regular. The LAD artery, first septal and first diagonal branches quickly filled with contrast material immediately after selective injection of the RCA. There was no intra or intercoronary collaterals. The LAD artery arisen as a terminal extension of the PDA, became bent over the apex of the heart, normally calibrated, terminated after the origin of the first septal branch and a diagonal branch at the proximal segment of the anterior interventricular groove. LAD has became progressively smaller in caliber going from the apex toward the base (Fig. 2). The patient then underwent coronary artery surgery because of significant narrowing in the Cx and RCA. Intraoperative transesophageal echocardiography (TEE) revealed that a left coronary ostium was present but it gave rise only to the Cx. A coronary probe was inserted to the middle-portion of the LAD and was advanced toward to the proximally. The probe was placed 1–2 cm distally of the left coronary ostium. The LAD artery was observed using the same calibrate with PDA at the apex of the heart. The left internal mammaian artery was placed to the LAD artery, and reversed saphenous vein graft was placed to the RCA and Cx individually.

E-mail address: fcingoz@gata.edu.tr (F. Cingoz).

1569-9293/$ - see front matter © 2003 Elsevier B.V. All rights reserved.
doi:10.1016/S1569-9293(03)00208-1
3. Discussion

Anomalies of origin of the LAD artery are very rare conditions. The frequency of LAD arterial origin anomaly is 0.2% among patients having selective coronary angiography [3]. It may arise from the right sinus of Valsalva in patients with congenital cardiac anomalies such as tetralogy of Fallot, double outlet right ventricle, and rarely in patients with otherwise normal hearts [4]. It may arise either from a separate ostium in the right coronary sinus or as a branch of the proximal right coronary artery and can either travel between the aorta and the main pulmonary artery or travel anterior to the pulmonary artery [5].

When a selective left coronary arteriography demonstrates the presence of only a Cx artery, the possibilities to be considered include absence of a left main coronary artery with a separately originating LAD and Cx branches in the left sinus of Valsalva, complete occlusion of the LAD immediately at its origin, and anomalous origin of the LAD from the right sinus of Valsalva or RCA [6]. In our patient, the LAD artery originated from the RCA as a terminal extension of the posterior descending artery. There were no intracoronary and intercoronary collaterals, and the LAD was becoming progressively smaller in caliber going from the apex toward the base. Because of this, the filling of the LAD is not likely secondary to a large collateral from the posterior descending to a totally occluded LAD. From our knowledge, it has not been reported as a single entity previously.

References