



Polytetrafluoroethylene-Covered Stent to Treat a Patient with Coronary Artery Aneurysm

Koroner Arter Anevrizması Olan Bir Olgunun Politetrafloroetilen Kaplı Stent ile Tedavisi

Treatment of Coronary Artery Aneurysm

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Öz

Koroner arter anevrizması seyrek görülen, koroner anjiyografi sırasında tesadüfen tespit edilen bir anomalidir. En sık sebebi aterosklerozdur. Koroner arter anevrizması tedavisinde uzlaşma sağlanmış bir tedavi yöntemi yoktur. Tedavi planı yapılırken anevrizmanın büyüklüğü, eşlik eden rüptür, tromboz gibi komplikasyon durumu veya anevrizmanın bu olaylara yatkınlık durumu, eşlik eden koroner arter hastalığı göz önüne alınır. Koroner arter anevrizması tedavisinde konservatif yaklaşım, cerrahi girişim ve perkütan koroner girişim başlıca tedavi yöntemleridir. Makalemizde sirkumflex arterinde kritik darlığın eşlik ettiği koroner anevrizması olan, tedavisi politetrafloroetilen kaplı stentle yapılan bir vaka sunulmuş ve literatür gözden geçirilmiştir.

Anahtar Kelimeler

Koroner Arter Anevrizması; Koroner Anjiyografi; Politetrafloroetilen Kaplı Stent

Abstract

Coronary artery aneurysms are uncommon anomalies, usually detected incidentally during coronary angiography. The most common cause of this anomaly is atherosclerosis. There is no consensus regarding the treatment of coronary aneurysms. The treatment plan should consider the magnitude of the aneurysm, accompanying rupture, complications such as thromboembolism or susceptibility to these events, and accompanying coronary artery disease. The main treatment methods are a conservative approach, surgical trial, and percutaneous coronary trial. In our article we present a patient with coronary artery aneurysm with a critical narrowing in the circumflex artery which was treated with a polytetrafluoroethylene coated stent, and review the literature.

Keywords

Coronary Artery Aneurysms; Coronary Angiography; Polytetrafluoroethylene Coated Stent

DOI: 10.4328/JCAM.4803

Received: 07.09.2016 Accepted: 23.10.2016 Printed: 01.02.2017 J Clin Anal Med 2017;8(suppl 1): 1-3

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Introduction

Coronary artery aneurysm is defined as dilatation of the coronary artery to a diameter more than 1.5 times that of the normal coronary artery segment. It is an uncommon anomaly. It is usually detected incidentally in patients undergoing coronary angiography [1]. The most common cause is atherosclerosis. Although rare, other reasons include inflammatory diseases, connective tissue diseases, infections, trauma, and congenital conditions [2].

Because it is a rare disease, there is no consensus on treatment of coronary artery aneurysm. Patients may be treated with a conservative approach that involves antiagregant and anticoagulant to prevent thrombus formation in the aneurysm and thromboembolism; a surgical approach involving aneurysm resection or ligation and coronary bypass surgery; or a percutaneous approach involving placement of graft-coated stent.

This study presents a case with circumflex coronary artery aneurysm accompanied by critical stenosis that was treated with polytetrafluoroethylene-covered stent placement, followed by review of the literature.

Case Report

A 66-year-old male patient who had no cardiovascular risk factors except for age was admitted to our clinic with class II exertional angina. On physical examination, blood pressure was 125/80 mmHg, pulse was 80/min, and cardiovascular and other system examinations were native. Routine blood tests, electrocardiogram, and transthoracic echocardiography did not detect any pathologic findings. Coronary angiography was chosen due to the patient's typical angina. Coronary angiography showed a saccular type aneurysm measuring 12*9mm in the proximal part of circumflex artery, noncritical stenosis in proximal, and 98% stenosis of critical lesion in distal (Figure 1). Percutaneous coronary intervention was planned. A 3.0*26mm bare metal stent (Liberte, Boston Scientific Corporation, USA) was placed at the distal lesion of the aneurysm. A 3.5*19mm polytetrafluoroethylene-covered graft stent (Direct-Stent, InSitu Technologies, USA) was placed at the aneurysm covering the proximal lesion and overlapping with distal stent placement. Post-dilatation was performed to overlap. Proximal optimization technique was applied using a 4.0*20mm noncompliant balloon (Mozec, Meril Life Sciences Pvt. Ltd., INDIA) inflated at 15 bars for 15 seconds. Full openness was achieved (Figure 2). The patient had stable clinical follow up and was discharged home with 100 mg acetylsalicylic acid (Coraspin, Bayer) per day lifelong and 75 mg clopidogrel (Baclan, Bayer) per day for six months. In the first, third, and 12 months of outpatient clinical controls the patient had no complaints. The patient had no pathological findings on physical examination and laboratory tests and was recommended for check-up every six months.

Discussion

Coronary artery aneurysm is defined as dilatation of the coronary artery to a diameter more than 1.5 times that of the normal coronary artery segment diffusely or partly. It is an anomaly which is uncommon, asymptomatic, and most often incidentally detected during coronary angiography. The incidence ranges from 0.15% to 4.9% in different angiography series [1]. The

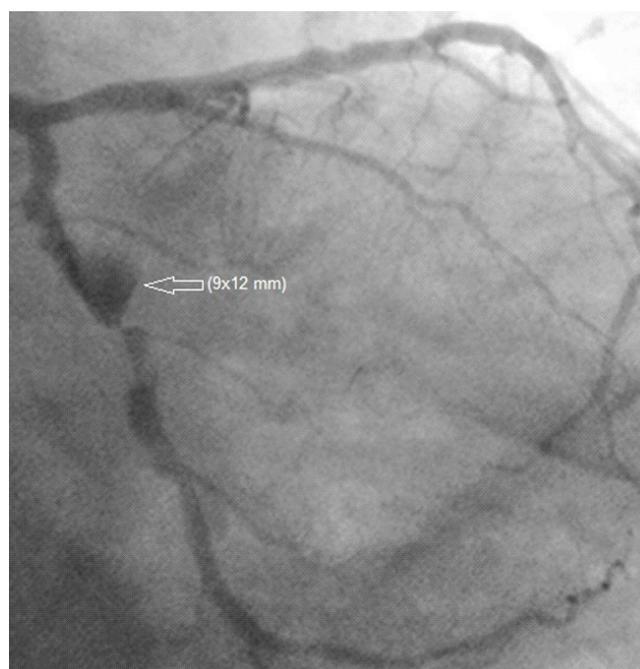


Figure 1. Saccular type circumflex artery aneurysm.



Figure 2. View of circumflex artery aneurysm after placement of polytetrafluoroethylene-covered graft stent.

most common cause is atherosclerosis. Rarely seen other reasons include inflammatory diseases such as Kawasaki disease, Takayasu disease, Systemic Lupus Erythematosus, connective tissue diseases such as Marfan syndrome, Ehler Danlos syndrome, infectious diseases such as Lyme disease, syphilis, and congenital conditions. In addition, trauma caused by interventional cardiology applications such as directional coronary atherectomy and coronary angioplasty has emerged as one of the rare causes [2]. This case was considered to be an aneurysm associated with atherosclerosis due to critical stenosis and accompanying vessel plaques.

There are two forms of coronary artery aneurysm: saccular and fusiform. Fusiform aneurysms are more common. Although sac-

cular aneurysms are seen less frequently, they are more susceptible to rupture, thrombosis, and fistulation [3]. The right coronary artery is the most commonly affected vessel. In order of frequency, the left anterior descending artery, the circumflex artery, and (rarely) the left main coronary artery are other affected vessels [4].

There is no consensus on treatment of coronary artery aneurysm. While planning the treatment, the size of the aneurysm, accompanying complications such as rupture, thrombosis, or susceptibility to these events, and accompanying coronary artery disease are taken into account. A conservative approach, surgery, and percutaneous coronary intervention are the main treatment methods. The treatment method for asymptomatic patients who have no accompanying complications such as compression, rupture, or thrombosis is a conservative approach including antiagregant therapy. The use of acetylsalicylic acid is recommended in patients with both coronary artery aneurysm accompanying coronary artery disease and isolated coronary artery aneurysm [5]. Surgical intervention is not recommended for aneurysms that are large, symptomatic, and accompanying cardiac pathology—especially coronary artery disease—due to risk of rupture or myocardial ischemia. Although there are many surgical methods, the basic principle is to maintain the repair or resection of the aneurysm along with providing continuity of coronary blood flow [6].

In saccular aneurysms that are not very wide or long, are symptomatic, and represent a high risk of thrombosis and embolism, placement of a polytetrafluoroethylene-covered stent is another method for patients suitable for percutaneous coronary intervention. Since 1990, clinical practices have started using polytetrafluoroethylene-covered stents because they are easy to implement and are a highly effective treatment method [7]. Use of these stents has taken a therapeutic place for most cases of iatrogenic coronary perforation and occasionally in the treatment of coronary artery aneurysm [8]. The most serious complication after placement of polytetrafluoroethylene-covered stent is the thrombosis of the stent due to reendothelialization [7].

As in the case we're reporting, in which the aneurysm was not very wide, not accompanied with ischemic symptoms, and suitable for stent placement, percutaneous coronary intervention is an important alternative to surgical treatment. Because it shortens the length of hospitalization, is easily implemented, and is highly effective, percutaneous coronary intervention should be kept in mind in the treatment of coronary artery aneurysms.

Competing interests

The authors declare that they have no competing interests.

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How to cite this article:

Aksu E. Polytetrafluoroethylene-Covered Stent to Treat a Patient with Coronary Artery Aneurysm. *J Clin Anal Med* 2017;8(suppl 1): 1-3.