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CASE REPORT

Double Balloon Angioplasty in a Patient with Right Coronary Artery Ectasia

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Abstract

Coronary artery ectasia (CAE) is an abnormality of the coronary anatomy and might be a variant of the Coronary Artery Disease (CAD). The CAE can cause angina pectoris and even MI with vasospasm, dissection, or thrombus in patients without CAD. Isolated CAE is defined as CAE without significant coronary artery stenosis. The mechanisms responsible for ectasia formation are not clearly known. However, the histopathological changes in CAE are shown to be similar to the changes that are observed in atherosclerotic lesions and they include intimal–medial degeneration and hyalinization. There is no current guideline for percutaneous coronary angioplasty in stenotic ectatic coronary arteries due to variations in coronary anatomy. We report successful simultaneous double balloon angioplasty in a patient who had coronary artery ectasia.

Key Words: double balloon angioplasty, coronary artery ectasia, coronary intervention

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Introduction

Coronary artery ectasia (CAE) is the localized or diffuse dilation of the coronary arteries exceeding the 1.5-fold of a normal adjacent segment on coronary angiography. (Swage et al., 1983) Coronary artery ectasia is an abnormality of the coronary anatomy. As half of the patients with CAE have coronary artery disease (CAD), some writers believe that CAE is a variant of the CAD. In several studies, patients with CAE have been shown to have increased risk of mortality, equivalent to the patients with CAD (Turgay et al., 2012).

The right coronary artery is the most commonly affected, followed by the left circumflex or left anterior descending artery (Hartrel et al., 1985). Coronary artery ectasia is frequently associated with high-burden thrombus formation, which has a significantly adverse outcome after primary percutaneous coronary intervention (Yip et al., 2002). CAE also remains as a challenge during primary PCI. Optimal stent apposition cannot be achieved easily in CAE due to the necessity of larger stent use with higher deployment pressures. We report here a case of right CAE treated with simultaneous double balloon angioplasty for optimal stent apposition.

Case

A 50-year-old male patient presented to the emergency unit because of a compressive chest pain started 1 hour ago. The electrocardiography (ECG) applied in the emergency unit revealed ST elevation of 2 mm in DII-III-aVF leads. Arterial blood pressure was 110/70 and pulse was 75/min. The patient was transferred to the catheter laboratory for primary angioplasty. Coronary angiography demonstrated non-critical stenosis in LAD and Cx, whereas RCA was occluded proximally with severe thrombotic burden (fig.1-a). The lesion site was predilated with a 3.0 x 15 mm balloon; however, distal flow could not be restored. Despite efforts aiming to aspirate the thrombus in RCA via aspiration catheter, we failed to aspirate an adequate amount of the thrombus. Thereafter, right diagnostic catheter was extended carefully in the right coronary artery and by applying a negative pressure with a 50 cc injector, a large amount of the thrombus was aspirated. The lesion in RCA was predilated with 3.0 x 15 balloon (15 atm) (Sprinter balloon, Medtronic) and distal flow was restored (fig.1-b).

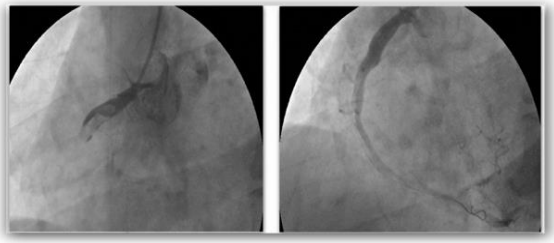

Figure 1: (a) Initial coronary angiogram revealing occluded RCA, (b) RCA after thrombus aspiration and balloon predilatation

A stent of 5.0 x 18 mm (22 atm) (Driver stent, Medtronic) was implanted in the lesion, however, because of the occurrence of a dissection proximal to the lesion, another stent of 5.0 x 12 stent (22 atm) (Driver stent, Medtronic) was implanted. Despite the successful implantation process, the stents were judged to be undersized relative to the vascular diameter. Therefore, we used two compliant balloons of 3.0 x 24 mm (Sprinter balloon, Medtronic) to postdilate the area between the two stents (max. 24 atm) (fig.2-a). We ended the procedure after concluding that optimal stent apposition was achieved (fig.2-b).

The patient was followed up by medical therapy and discharged uneventfully in a healthy condition

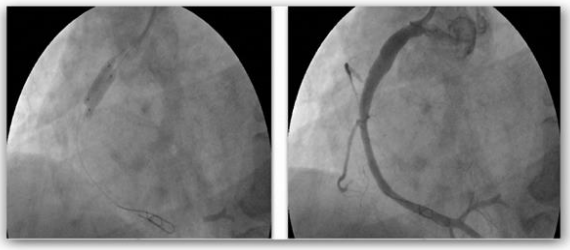

Figure 2: (a) Double balloon angioplasty for postdilatation (b) Final coronary angiogram

Discussion

We performed a successful post-dilatation using double balloon method to achieve optimal outcome after primary stenting in our patient who had a significantly large right coronary artery, and no adverse complication was observed.

Coronary vascular interventions using new materials and techniques have allowed reperfusion of complex vascular lesions. Despite developments in coronary stent and balloon technologies, coronary angioplasty may not prove to be effective due to variations in coronary anatomy. In cases with tortuous and large vessels, physicians still fall short of achieving adequate outcomes. There is still no consensus about the treatment of such cases. In a previous case report, a successful outcome was observed after the achievement of an adequate double balloon dilatation in a patient with a large and tortuous right coronary artery (Baron and Nielson, 2008). Our patient presented with a large right coronary artery which was treated by implantation of two stents in the proximal lesion. There was a significant difference between the proximal and distal vascular diameters after the procedure. We applied double balloon dilatation in the lesion site in order to achieve a normal blood flow and obtain adequate vascular diameter in the distal stent area. A successful case of simultaneous double stent implantation was also reported (Rha et al., 2009). Although there is only one similar case in the literature using only balloon angioplasty, pre- and post-dilatation angioplasty with double balloons can be a safe method for achieving optimal outcomes, particularly when used carefully in large and tortuous.

Informed Consent: Written informed consent was obtained from patients who participated in this study.
Peer-review: Externally peer-reviewed.
Author Contributions: Concept-AK; Design-HIT; Supervision-MK; Data Collection and/or Processing-AK; Analysis and/or Interpretation-HIT; Literature Review-ZYG; Writing - OB; Critical Review - AK
Conflict of Interest: No conflict of interest was declared by the authors.
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