Postpartum Spontaneous Coronary Artery Dissection: How to Manage?

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ABSTRACT

Spontaneous coronary artery dissection is an infrequent cause of acute coronary syndrome. We present the case of a 29 years old Turkish female, one week postpartum, diagnosed as spontaneous coronary dissection who was treated successfully with coronary artery bypass grafting. We overview the management strategies and treatment options for postpartum spontaneous coronary artery dissection.

Key Words: Coronary artery dissection, spontaneous; postpartum period; coronary artery bypass grafting

Postpartum Spontan Kroner Arter Diseksiyonu: Ne yapmalı?

ÖZET

Spontan koroner arter diseksiyonu akut koroner sendromun nadir nedenlerindendir. Bu çalışmada postpartum birinci haftada spontan koroner arter diseksiyonu tanısıyla koroner arter baypas operasyonu uygulanan 29 yaşında Türk bayan hasta bildirilmiştir. Bu çalışmada postpartum spontan koroner arter diseksiyonu takip ve tedavi yaklaşımları gözden geçirilmiştir.

Anahtar Kelimeler: Koroner arter diseksiyonu, spontan; postpartum dönem; koroner arter baypas greftleme

INTRODUCTION

Spontaneous coronary artery dissection (SCAD) is an infrequent cause of acute coronary syndrome. Clinical presentation ranges from unstable angina to sudden cardiac death. It frequently affects young, predominantly female population who have no risk factors for coronary artery disease[1]. About 20 to 30 percent of cases occur in the third trimester of pregnancy or within 3 months postpartum. Although several risk factors and mechanisms like vascular structure, hormonal changes, shear stress, fibromuscular dysplasia have been described in the literature as associated factors, the etiology and pathogenesis is still unclear. Optimal treatment remains also controversial. There are reports of patients successfully treated either medically or by percutaneous and surgical interventions. We present clinical course, treatment approach and technique of surgery of a young turkish female with postpartum SCAD.

CASE REPORT

A 29 year old turkish female, one week postpartum, was referred to the hospital with substernal chest pain and dyspnea. Physical examination including cardiac evaluation was unremarkable. Electrocardiogram showed T- wave inversion on leads V2-V5. Cardiac enzymes were elevated with troponine I of >50.0 ng/ml (normal range:0-0.1ng/ml) and creatine kinase-MB of 128 U/L (normal range:7-25 U/L) at 2 hours after admission. Echocardiography confirmed hypokinesis of the apex, apical septum and mid-anterior segments of left ventricle with an ejection fraction (EF) of 40-45%. Patient's medical history was unremarkable, without risk factors of coronary artery disease and there was no history of connective tissue disorder, use of alcohol, drugs and blood test for antiphospolipid antibodies was negative. Coronary angiography revealed spontaneous coronary dissection of proximal left anterior descending coronary artery (LAD) (Figure 1).

She became asymtomatic with medical treatment including heparin, nitrate, beta-blocker, angiotensin converting enzyme inhibitor, statine, clopidogrel and aspirin and was stable for 10 days. Despite aggressive medical treatment, she became symptomatic again

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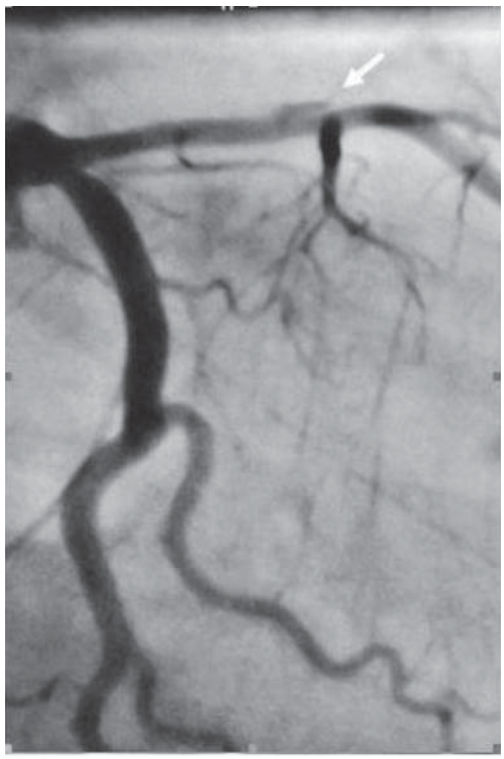

Figure 1. Initial coronary angiography showing dissection of left anterior descending coronary artery (white arrow) without significant reduction of antegrade flow. Left coronary angiogram right anterior oblique caudal (RAO -20).

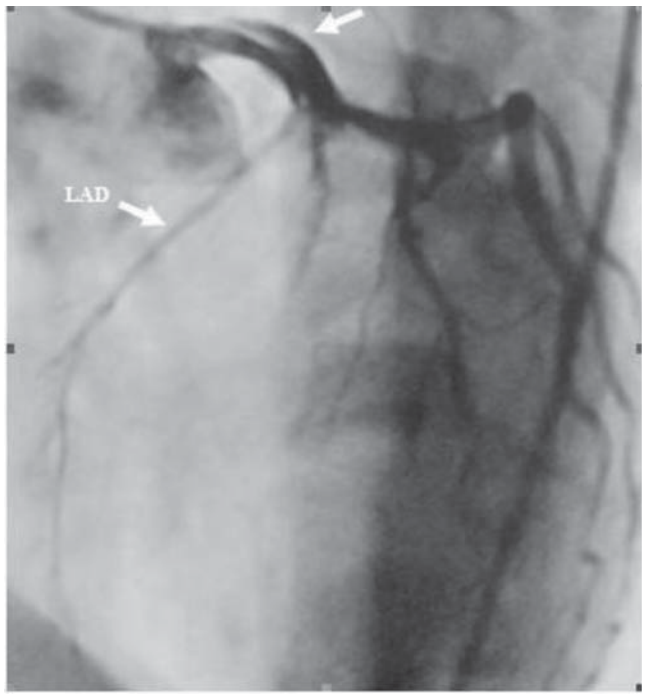

Figure 2. Control coronary angiography showing dissection of left main coronary artery (white arrow) and left anterior descending coronary artery (LAD), severely disturbing distal coronary flow. Left coronary angiogram left anterior oblique cranial (LAO +45) .

and repeat angiography showed propagation of the dissection to left main coronary artery (LMCA) and proximal circumflex (CX) artery (Figure 2). Control echocardiography showed reduction of EF to 35%. In the view of further extension of dissection, multivessel involvement, and deterioration of left ventricular function, surgical treatment was planned. Left internal mammary artery (LIMA) graft to LAD and saphenous vein grafts to diagonal and obtuse marginal coronary arteries were used for revascularization with on-pump technique. Diagnosis of dissection was confirmed after arteriotomy, seeing the dissection flap extending from proximal segment toward LMCA and distally to mid-LAD including the ostium of diagonal branch. The flap was sealed to the wall of the artery using 8/0 prolene running suture, excluding the false lumen, followed by routine LIMA-LAD anastomosis using 7/0 prolene running suture, without ligating the proximal segment. Diagonal and obtuse marginal arteries were revascularized in routine fashion providing the continuity of true lumen. Postoperative follow-up was uncomplicated, she was discharged from hospital on postoperative seventh day. Control echocardiography after postoperative 3 months revealed preserved left ventricular systolic function, with an EF of 60% and control CT angiography shows functioning grafts without any further dissection. The patient is free of any symptoms 1 year after surgery.

DISCUSSION

Although peripartum SCAD is rare, it is a serious risk for females of childbearing age that requires high index of clinical suspicion and prompt diagnosis with coronary angiography. In the last two decades, there has been an increase in the number of cases reported in the literature, but optimal treatment strategy remains controversial.

Medical treatment is generally preferred for patients who are either hemodynamically stable, asymptomatic after acute phase with single vessel dissections or patients with no residual viable myocardium in infarcted area[2-4]. Partial or complete resolution of coronary dissection with medical treatment has been documented before as case presentations[2,3]. In two recent studies,with larger study groups, an uncomplicated in- hospital course and a high rate of spontaneous resolution of the dissection was reported, providing a rationale for an initial conservative strategy in many patients[1,5]. However destabilization of coronary lesion, reinfarction, persistent or progressive dissections and congestive heart failure can not be predicted. There are reported cases who were managed medically initially, but later received coronary stents because of worsening clinical condition and persistent dissections[6]. Medical treatment is started to stabilize patient's clinical condition and gain time for making decision[7,8].

Percutaneous coronary interventions (PCI) have been reported with high success rates, and usually preferred for localized, single vessel dissections[9]. In contrast, Tweet M and colleagues, documented PCI to be associated with high rates

of procedural failure and complications like propagation of dissection and displacement of intramural hematoma by stent placement[1]. Similarly Ito H and colleagues, reported to have extensions of the false lumen in 50% of their stented cases[5]. In this case, we preferred medical treatment first for hemodynamic stabilization instead of percutaneous intervention, since it was a limited, non-occlusive dissection in a single vessel without any disturbance in antegrade coronary flow, thus permit healing of coronary vessel wall. The patient was kept in close follow-up and a repeat angiography was planned with recurrence of symptoms and early signs of deterioration of left ventricle. Since the dissection was shown to propagate and involve LMCA, prompt surgical intervention was decided. We believe that for these patients, close follow-up is necessary with repeat imaging in the setting of clinical deterioration suggestive of progressive dissection that may warrant intervention.

In case of multivessel involvement and LMCA dissection, taking the percentage of ischemic myocardium at risk into consideration, surgery seems to be the best alternative[10-12]. In surgery, incorporation of true and false lumen is essential. Technique for anastomosis hasn't been discussed in details in reported cases; what we preferred for LAD was to incorporate the two lumens with a separate 8/0 suture, sealing the dissecting flap to coronary wall before anastomosis since the effected segment was too long, then we continued with standard technique of distal anastomosis without ligating the proximal segment of the artery. Distal anastomosis should be carefully performed to establish coronary flow beyond dissection and to decrease risk of propagation of dissection.

CABG is a safe and effective treatment modality. Timing of surgery is important; early, even emergency surgery should be planned in case of ongoing symptoms, signs of hemodynamic instability and persisting ischemia. Comparison between postpartum and nonpostpartum SCAD cases, documented more prevalent congestive heart failure on admission, lower ejection fractions on echocardiograms, more involvement of proximal segments of coronary vessels and larger infarcts in postpartum patients[5].

CONCLUSION

Coronary artery bypass grafting might be a better alternative for revascularization in postpartum SCAD patients compared to percutaneous interventions. Successful outcomes reported with surgery, might encourage surgeons for early CABG if there is no major contraindication for anesthesia and surgery.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

CONFLICT of INTEREST

The authors declare that they have no competing interests.

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