June 2021, Volume 6, Issue 1. e131476

A Case Report of Postpartum Acute Aortic Dissection

Maryam Taherkhani [1], Adineh Taherkhani [*,2]

[1] Cardiovascular Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Clinical Research Center of Loghman Hakim Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

** Corresponding author: Adineh Taherkhani, Clinical Research Center of Loghman Hakim Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: adinehtaherkhani.80@gmail.com*

DOI: 10.5812/intjcardiovascpract-131476

Submitted: 23-06-2020
Accepted: 01-12-2020

Keywords:
Postpartum
Acute
Aortic Dissection

Abstract

Acute aortic dissection is a rare but lethal disaster during pregnancy and early postpartum. It has a very high mortality. Emergent or urgent surgical correction is the preferred treatment for most patients. We report a case of postpartum type A aortic dissection who underwent a successful emergent Bental procedure.

INTRODUCTION

Acute aortic dissection is a rare but lethal disaster event during pregnancy. It can threaten both mother and fetus's life. More than 50% of patients died before arriving at the hospital, and the in-hospital mortality rate is about 6%. For the life-saving of mother and fetus, prompt diagnosis and treatment are essential [1].

CASE REPORT

A 28-years-old woman was referred to our emergency department with the first diagnosis of pulmonary thromboembolism. She was a young woman with an obstetric history of gravid 4 paras 4. Her last childbirth was 20 days ago via normal vaginal delivery. She complained of sudden onset dyspnea since 24 hours ago with hemoptysis. She had no history of chronic hypertension, diabetes mellitus, or smoking. She had no regular follow-up during pregnancy and delivered her babies in a first step hospital without any complication. The first physical examination revealed a normal blood pressure (130/90 mmHg), tachycardia (heart rate: 110 beats/min), and tachypnea with a 28/min respiratory rate. Infusion of unfractionated heparin has been started at the first center. After 30 minutes of arrival at our hospital, she developed respiratory distress with hypoxemia (O2 saturation: 80%), so she was intubated and underwent mechanical ventilation. At this time, physical examination showed a cardiac diastolic murmur in the left sternal border and diffuse lung crackles. We stopped heparin and did transthoracic echocardiography, which led to severe left ventricular hypertrophy and reduced ejection fraction (EF = 30%). A dissection flap was seen in the ascending aorta, which extended from aortic cusp to arc and moderates to severe aortic regurgitation but no pericardial effusion. According to the diagnosis of aortic dissection, we reverse the heparin effect with an injection of 5 cc protamine sulfate.

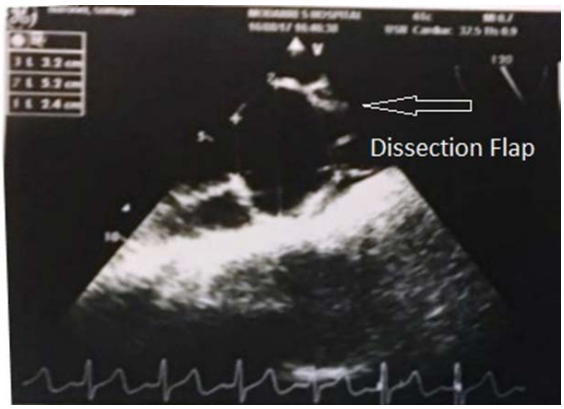

Figure 1. Transesophageal echocardiography mid esophageal ascending aorta long axis. The arrow shows the dissection flap of the ascending aorta.

CT angiography was not done because the patient was unstable, and blood pressure was reduced to 90/70 mmHg. We sent the patient for cardiac surgery and

transesophageal echocardiography (TEE) in the operating room (Fig 1). The surgeon did the Bental procedure and reimplanted the left coronary artery. Still, because of dissection extending to the right coronary artery and occluded right coronary artery, he put a vein graft on the posterior descending artery (Fig 2). The patient was on the pump for another 2 hours after finishing the procedure. After treating heart failure with diuretic and inotrope, the surgeon could off the patient from the pump and transferred the patient to ICU. Fortunately, the patient discharge from the hospital after one week in good condition.

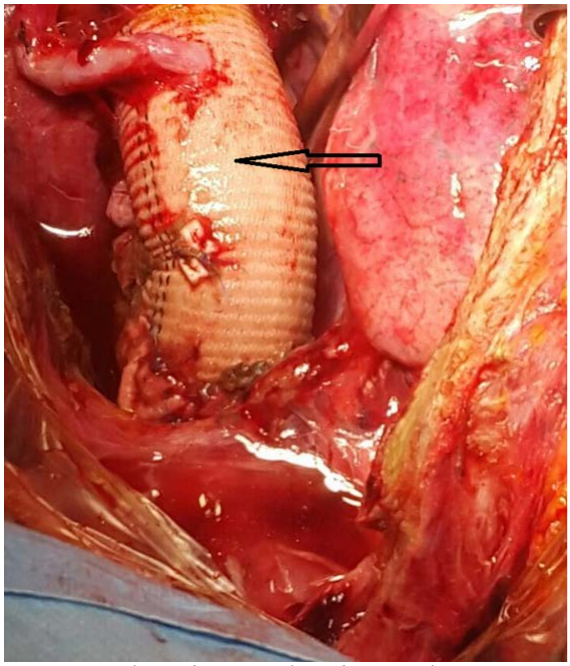

Figure 2. Bental procedure Arrow shows dacron patch

DISCUSSION

Aortic dissection is a lethal disaster for both mother and fetus during pregnancy. According to population-based studies, acute aortic dissection is about three cases per 100000 populations [1]. While some population-based studies reported the occasional relationship between pregnancy and acute aortic dissection in a young woman is a selection bias in the case report, [2] the majority of studies showed that pregnancy is a risk factor for aortic dissection [3, 4].

Risk factors for aortic dissection include hypertension, Marfan's syndrome, traumatic, atherosclerotic or inflammatory injuries of the aortic media, Ehler's danlos syndrome type IV, turner's syndrome, connective tissue disease, and bicuspid aortic valve [5-7].

In pregnant women, the most common risk factor for aortic dissection is Marfan's syndrome. The second risk factor is pregnancy itself, even without any other predisposing factor [8]. Because pregnancy is associated with increased heart rate, stroke volume, cardiac output, left ventricular wall mass, and end-diastolic hemodynamic states like chronic hypertension [2, 3].

Aortic dissection in Marfan's patients is present at the early age of the pregnancy and more unsatisfactory outcome for both mother and child than previous healthy women. For life-saving of mother and fetus, prompt diagnosis and management are essential [8].

According to clinical examination, our patient didn't show any evidence of hereditary connective tissue disorders. Patients with aortic dissection present with severe, abrupt chest or back pain. Hypertension, hypotension, shock or tamponade, pulse deficit, aortic regurgitation, and abdominal pain.

Chest x-ray abnormality includes widened mediastinum (60%), abnormal aortic counter (48%), and in 16% of the patient is normal. An electrocardiogram can be normal or have changed, including left ventricular hypertrophy (like our case), myocardial ischemia, or infarction [9-12]. About 10% of patients do not present with the typical symptom of ripping chest pain and pulse deficit [13], like our patient that first presented with sudden-onset dyspnea and hemoptysis. Estimated mortality has been about 1% per hour for the first 48 hours and exceeds 80% during the first month [14]. Near 20% of the patient died before to arrive at the hospital, 30% during hospital admission, and about 20% during the next ten years [15].

Stanford classification divided the aortic dissection into two types. Type A in which the dissection involves the ascending aorta (proximal dissection), and type B consists of another part of the aorta except for the ascending aorta. Treatment includes medical therapy with βblockade agents, angiotensin-converting enzyme, or angiotensin II receptor blockers to maintain systolic blood pressure ≤ 120mmhg and heart rate ≤ 60 beats/min. Emergent or urgent surgical correction is the preferred treatment for type A and complicated type B dissection [16]. Our patient was in type A aortic dissection, so we underwent an emergent Bental procedure.

CONCLUSIONS

We reported this case to catch our colleagues' attention that Aortic dissection is a life-threatening emergency in pre and postpartum women even if there is no risk factor. It may be present only with sudden onset dyspnea.

REFERENCES

1. Clouse WD, Hallett JW, Jr., Schaff HV, Spittell PC, Rowland CM, Ilstrup DM, et al. Acute aortic dissection: population-based incidence compared with degenerative aortic aneurysm rupture. Mayo Clin Proc. 2004;79(2):176-80. **doi:** 10.4065/79.2.176 **pmid:** 14959911
2. Thalmann M, Sodeck GH, Domanovits H, Grassberger M, Loewe C, Grimm M, et al. Acute type A aortic dissection and pregnancy: a population-based study. Eur J Cardiothorac Surg. 2011;39(6):e159-63. **doi:** 10.1016/j.ejcts.2010.12.070 **pmid:** 21353789

3. Barrett JM, Van Hooydonk JE, Boehm FH. Pregnancy-related rupture of arterial aneurysms. Obstet Gynecol Surv. 1982;37(9):557-66. **doi:** 10.1097/00006254-198209000-00001 **pmid:** 6752786
4. Kang BH, Lee MA, Rhee YE, Noh HT. Unexpected acute aortic dissection after elective cesarean section delivery: Report of a case and review of the literature. Korean J Obstetric Gynecol. 2011;54(11). **doi:** 10.5468/kjog.2011.54.11.696
5. Wilson SK, Hutchins GM. Aortic dissecting aneurysms: causative factors in 204 subjects. Arch Pathol Lab Med. 1982;106(4):175-80. **pmid:** 6895989
6. Bondy CA, Van PL, Bakalov VK, Ho VB. Growth hormone treatment and aortic dimensions in Turner syndrome. J Clin Endocrinol Metab. 2006;91(5):1785-8. **doi:** 10.1210/jc.2005-2625 **pmid:** 16507631
7. Homme JL, Aubry MC, Edwards WD, Bagniewski SM, Shane Pankratz V, Kral CA, et al. Surgical pathology of the ascending aorta: a clinicopathologic study of 513 cases. Am J Surg Pathol. 2006;30(9):1159-68. **doi:** 10.1097/01.pas.0000213270.38091.69 **pmid:** 16931961
8. Yuan SM. Aortic dissection during pregnancy: a difficult clinical scenario. Clin Cardiol. 2013;36(10):576-84. **doi:** 10.1002/clc.22165 **pmid:** 23843107
9. Collins JS, Evangelista A, Nienaber CA, Bossone E, Fang J, Cooper JV, et al. Differences in clinical presentation, management, and outcomes of acute type a aortic dissection in patients with and without previous cardiac surgery. Circulation. 2004;110(11 Suppl 1):II237-42. **doi:** 10.1161/01.CIR.0000138219.67028.2a **pmid:** 15364869
10. Rampoldi V, Trimarchi S, Eagle KA, Nienaber CA, Oh JK, Bossone E, et al. Simple risk models to predict surgical mortality in acute type A aortic dissection: the International Registry of Acute Aortic Dissection score. Ann Thorac Surg. 2007;83(1):55-61. **doi:** 10.1016/j.athoracsur.2006.08.007 **pmid:** 17184630
11. Nienaber CA, Fattori R, Mehta RH, Richartz BM, Evangelista A, Petzsch M, et al. Gender-related differences in acute aortic dissection. Circulation. 2004;109(24):3014-21. **doi:** 10.1161/01.CIR.0000130644.78677.2C **pmid:** 15197151
12. Hagan PG, Nienaber CA, Isselbacher EM, Bruckman D, Karavite DJ, Russman PL, et al. The International Registry of Acute Aortic Dissection (IRAD): new insights into an old disease. JAMA. 2000;283(7):897-903. **doi:** 10.1001/jama.283.7.897 **pmid:** 10685714
13. Golledge J, Eagle KA. Acute aortic dissection. Lancet. 2008;372(9632):55-66. **doi:** 10.1016/S0140-6736(08)60994-0 **pmid:** 18603160
14. Jayaram A, Carp HM, Davis L, Jacobson SL. Pregnancy complicated by aortic dissection: caesarean delivery during extradural anaesthesia. Br J Anaesth. 1995;75(3):358-60. **doi:** 10.1093/bja/75.3.358 **pmid:** 7547059
15. Olsson C, Thelin S, Stahle E, Ekbom A, Granath F. Thoracic aortic aneurysm and dissection: increasing prevalence and improved outcomes reported in a nationwide population-based study of more than 14,000 cases from 1987 to 2002. Circulation. 2006;114(24):2611-8. **doi:** 10.1161/CIRCULATIONAHA.106.630400 **pmid:** 17145990
16. Braunwald E, Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL. Harrison's principles of internal medicine: McGraw Hill; 2001.