Elmer Press

Case Report J Med Cases. 2016;7(3):105-108

Type I Aortic Dissection on Pregnant Woman

Sukru Gurbuz[a, c], Irfan Bayhan[a], Muhammet Gokhan Turtay[a], Hakan Oguzturk[a], Serdar Derya[a], Ismail Okan Yildirim[b]

Abstract

Acute aortic dissection is rare in young women. Half of the dissections in women younger than 40 years old occur during pregnancy, typically in third trimester and in postpartum period. The reasons for increased rate of aortic dissection in pregnancy are known to be increased sex hormones, degeneration of elastic tissue in aorta, and pressure of the uterus on aorta and distal iliac arteries causing pathological alterations in the artery walls by increasing the resistance to distal flow. Aortic dissection is a condition that can be presented with different symptoms and can be fatal for both mother and the fetus if the diagnosis is missed or late. Despite the diagnosis tools like computerized tomography, echocardiography, magnetic resonance imaging or aortography, suspicion of aortic dissection is still the basis of diagnosis. Treatment objective is to provide the security of the mother and the fetus. In this case presentation, approach to pregnancy-induced aortic dissection was discussed by presenting a case in which a 41-year-old woman in 34th week presented with swelling in the legs, pain in the epigastric region and blurry vision complaints, developed type A aortic dissection and died during the follow-up.

Keywords: Aortic dissection; Type I; Pregnant woman

Introduction

Aortic dissection, defined as the dissection of media layer of aorta longitudinally from intima layer, is one of the cardiovascular emergencies associated with high mortality and morbidity which requires quick diagnosis and treatment [1]. It is important to diagnose aortic dissection early as the prognosis is bad. Especially for aortic dissections involving ascending aorta and arcus, mortality rate in the early days is 1-3% per hour [2]. Mortality rate in the first 48 h is 50% and mortality rate in 3 months is 90% and it is a life threatening condition [3]. The disease is more prevalent in men than women [4]. Acute aortic dissection in young women is rare [5, 6]. Half of the dissections in women younger than 40 years old occur during pregnancy, typically in third trimester and postpartum period [5]. The reasons for increased rate of aortic dissection in pregnancy are known to be increased sex hormones, degeneration of elastic tissue in aorta, and pressure of the uterus on aorta and distal iliac arteries causing pathological alterations in the artery walls by increasing the resistance to distal flow [5]. Aortic dissection in the pregnant women causes serious risk for both mother and the fetus and the mortality rates are high for both of them. The objective is to secure mother and the fetus [7]. Aortic dissection and rupture are mostly secondary to atherosclerosis and hypertension, but they can also be caused by trauma and non-traumatic causes. Also genetic factors like Ehler-Danlos syndrome and Marfan syndrome could play a role in the pathology [8]. The most used classification is the one made by De Bakey et al. In this classification, dissections starting from proximal aorta and involving the whole aorta are classified as type I. The ones involving only ascending aorta are called type II and the ones involving only descending aorta are named type III aortic dissection [9]. According to Stanford classification, regardless of the distal involvement, the dissections involving the ascending aorta and arcus aorta are type A, and the dissections involving the descending aorta are called type B [10]. Despite the diagnosis tools like computerized tomography, echocardiography, magnetic resonance imaging or aortography, suspicion of aortic dissection is still the basis of diagnosis. In this case report, we aimed to explain the diagnosis process of aortic dissection which started as a clinical suspicion in a 41-year-old woman with 34th week pregnancy and that it is a serious cardiovascular emergency situation.

Case Report

A 41-year-old, 34-week pregnant woman with a history of 4 gravida, three term and three living children, was admitted to a private hospital with headache complaint 2 days before presentation to our hospital. The patient was treated for the symptom and then discharged. The patient was admitted to another hospital the same day she was admitted to our hospital with swelling in the legs and pain in the epigastric region, and her examination revealed 170/100 mm Hg blood pressure and

Manuscript accepted for publication February 12, 2016

[a]Department of Emergency Medicine, Inonu University, Malatya, Turkey
[b]Department of Radiology, Inonu University, Malatya, Turkey
[c]Corresponding Author: Sukru Gurbuz, Department of Emergency Medicine, Inonu University, Malatya, Turkey. Email: sukrugurbuz@gmail.com

doi: http://dx.doi.org/10.14740/jmc2437w

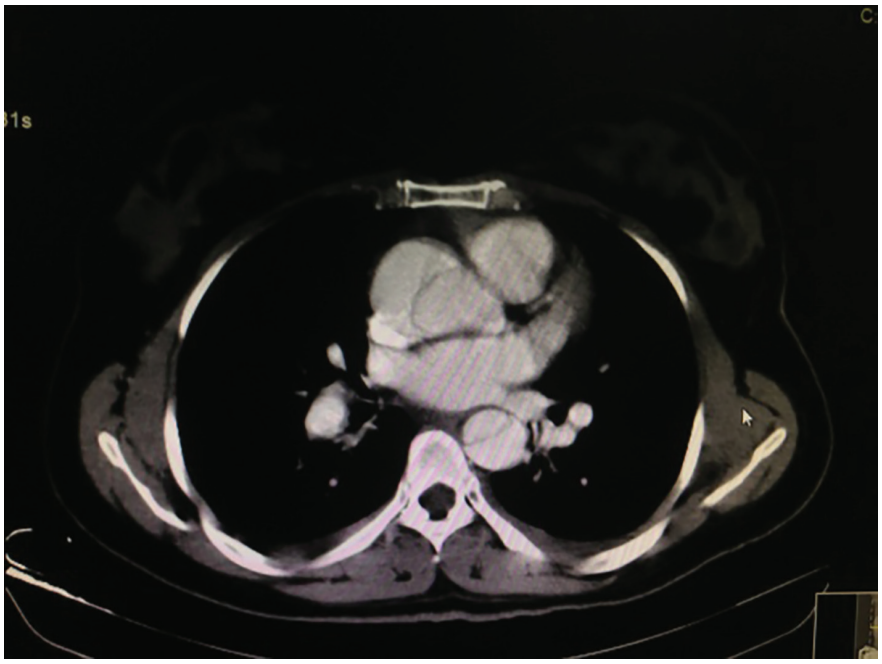

Figure 1. Aortic dissection in thorax tomography. Contrast tomography is performed in patients with aortic dissection.

blurry vision. The patient was transferred to our hospital with pre-diagnosis of preeclampsia. In her medical history taken in the emergency room, the patient stated that she had uncontrolled hypertension for the last 2 months and she did not use medication. She also stated that she had been experiencing the headache for a long time and she started to experience pain in her chest and back for the last 2 days. In our hospital, her arterial blood pressure in the left arm was 170/100 mm Hg, body temperature was 36.5 °C, and heart rate was 96 bpm. ECG of the patient showed sinus rhythm. The patient consulted with obstetrics department with the routine laboratory tests: WBC 12,300/ml, Hgb 10.4 g/dL, INR 1.6, Na 129 and microprotein in the urine 795 mg/dL. Other laboratory results were normal. Obstetrics department revealed that there was no pathological condition regarding the fetus but the arterial blood pressure of the mother was 187/69 mm Hg in the left arm and 100/71 mm Hg in the right arm. One ampoule of celestone was administered in the delivery room. Transthoracic echocardiography performed by the cardiology department for aortic dissection suspicion revealed dissection flap and normal left ventricle functions. The patient consulted with cardiovascular surgery department. As requested by cardiovascular surgery department, informed consent was acquired from the patient and relatives and thorax and full abdomen computerized tomography was performed. Tomography revealed an appearance consistent with dissection which started from arcus aorta, continued through the aorta and ended 2 - 3 cm before iliac artery bifurcation (Figs. 1, 2). The patient was administered esmolol and nitroglycerine and transferred to cardiovascular surgery intensive care unit. Perimortem cesarean section was performed because of the development of cardiac arrest in the patient after the transfer. The baby was transferred to newborn intensive care unit. The patient deceased in the intensive care unit despite all of the interventions.

Discussion

The most important symptom in aortic dissections is persistent chest pain with sudden onset [11]. Although the location of the pain does not always reveal the location of the dissection, it could provide some clues. In a study by Acikalin et al, it was suggested that while chest pain is a more prevalent symptom in patients with type 1 and type 2 dissection, abdominal pain is more common in patients with type 3 dissection [12]. In our case, the pain occurred in epigastric region, back and chest. It was also reported that neurological symptoms can be seen as well as these symptoms [13]. Our patient had blurry vision and headache.

Difference between pulses of both arms and difference in systolic and diastolic blood pressure in both arms can be seen in aortic dissections [12]. In our case, there was an 80 mm Hg difference between right and left arm systolic pressures.

It is reported that the diagnosis can be made with echocardiography and magnetic resonance, both of which are without radiation risks. It is reported that computerized tomography can be performed when these methods are not available, and it is safe in the last period of the pregnancy [3]. Telecardiography in aortic dissection may reveal widened mediastinum, and echocardiography and tomography may reveal flap [12]. Our patient was diagnosed after computerized tomography and transthoracic echocardiography revealed dissection flap and the dissection classification was made.

Studies show De Bakey type I as the most frequent type while type 3 and type 2 follow type 1. Ten of the 22 patients had type 1 dissection in Acikalin et al's study, while Buket et

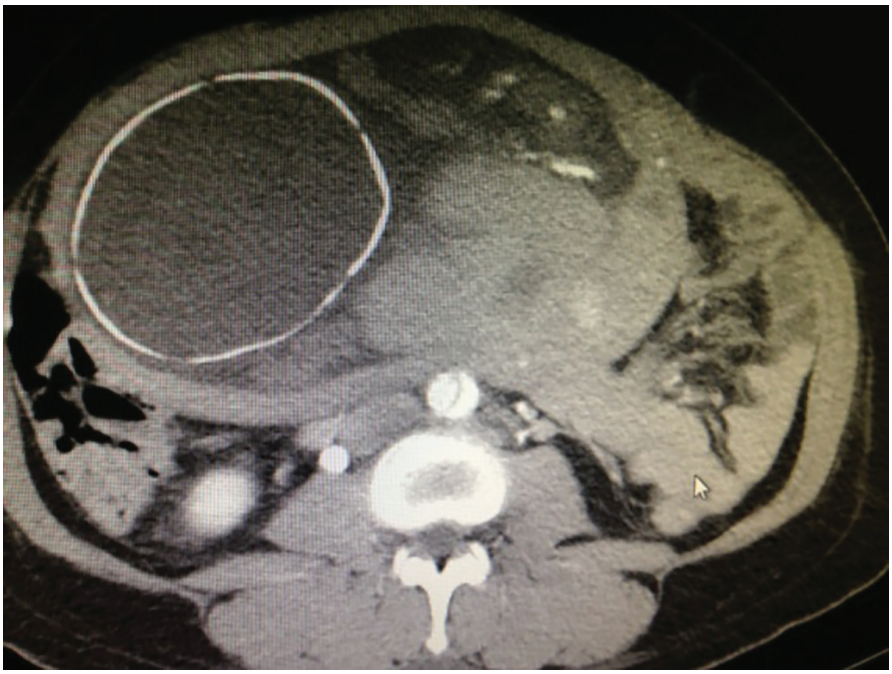

Figure 2. Aortic dissection in abdominal tomography. Contrast-enhanced abdominal tomography is performed in patients with aortic dissection and the baby's skull is seen.

al's study revealed type 1 dissection in 13 of 14 patients with aortic dissection [12, 14]. Konishi et al reported that 70% of the pregnant and postpartum cases were De Bakey type 1 dissection (involvement of aorta root, arcus aorta and descending aorta) [15]. Our patient had De Bakey type 1 dissection. Stanford type B dissection is seen in approximately 70% of the studies [16, 17]. Our case is an example of Stanford type A.

Initial treatment of aortic dissection is providing hemodynamic control [18]. In our case, antihypertensive treatment was promptly started in the emergency room and the hemodynamics of the patient in the emergency room was stable. Apart from hemodynamic control, aorta repair without fetus abortion if the pregnancy is earlier than 28 weeks and aorta repair with cesarean section if the pregnancy is later than 32 weeks is recommended [5, 7]. It is reported that type B dissections can be monitored until term and the repair can be performed postpartum. On the contrary, there are different opinions about 28 - 32 weeks and it is emphasized that the decision should be made in accordance with the condition of mother and fetus. It is argued that in case of presence of cardiovascular instability, end-organ or uterus ischemia or fetal distress, cesarean section and operative repair should be performed [7]. In our case, surgical intervention was decided, but the patient developed cardiac arrest in the cardiovascular surgery intensive care unit and deceased before the surgical intervention. These patients should be diagnosed early and the treatment should start promptly as the prognosis is bad [2, 9].

Conclusion

Being one of the hardest diseases to diagnose, aortic dissection should be considered in differential diagnosis and in case of suspicion, echocardiography which can be performed bedside in emergency rooms or telecardiography, computerized tomography or magnetic resonance imaging should be performed and the final diagnosis should be made quickly. Hemodynamic stability treatment of the cardiovascular emergent disease which has high mortality in pregnancy should start immediately and if any surgical intervention is planned, the patient should be prepared and taken to the surgery immediately.

References

1. Mukherjee D, Eagle KA. Aortic dissection--an update. Curr Probl Cardiol. 2005;30(6):287-325.
2. Anagnostopoulos CE, Prabhakar MJ, Kittle CF. Aortic dissections and dissecting aneurysms. Am J Cardiol. 1972;30(3):263-273.
3. DeBakey ME. The development of vascular surgery. Am J Surg. 1979;137(6):697-738.
4. Knight B. The Pathology of Sudden Death. In: Forensic Pathology. 2nd Edition. 1996. Great Britain by The Bath Pres. Page: 505-506.
5. Ozdemir B. Aortic dissection in pregnancy. Turkiye Klinikleri J Int Med Sci. 2005;1:54-58.
6. Guo C, Xu D, Wang C. Successful treatment for acute aortic dissection in pregnancy---Bentall procedure concomitant with cesarean section. J Cardiothorac Surg. 2011;6:139.
7. Ray P, Murphy GJ, Shutt LE. Recognition and management of maternal cardiac disease in pregnancy. Br J Anaesth. 2004;93(3):428-439.

8. Behera C, Rautji R, Lalwani S, Dogra TD. Sudden death due to aortic rupture while swimming - A case report. J Indian Acad Forensic Med. 2008;30:79-81.
9. DeBakey ME, McCollum CH, Crawford ES, Morris GC, Jr., Howell J, Noon GP, Lawrie G. Dissection and dissecting aneurysms of the aorta: twenty-year follow-up of five hundred twenty-seven patients treated surgically. Surgery. 1982;92(6):1118-1134.
10. Nakashima Y, Kurozumi T, Sueishi K, Tanaka K. Dissecting aneurysm: a clinicopathologic and histopathologic study of 111 autopsied cases. Hum Pathol. 1990;21(3):291-296.
11. Sullivan PR, Wolfson AB, Leckey RD, Burke JL. Diagnosis of acute thoracic aortic dissection in the emergency department. Am J Emerg Med. 2000;18(1):46-50.
12. Acikalin A, Satar S, Akpinar O, Kuvandik G, Sari A, Kanadasi M, Yaliniz H. Aortic Dissection: Two Years of Clinical Experience in A Patient Who Admitted to a University Hospital. Turkiye Acil Tip Dergisi. 2005;5(1):32-35.
13. Prendes JL. Neurovascular syndromes of aortic dissection. Am Fam Physician. 1981;23(6):175-179.
14. Buket S, Apaydin A, Hamulu A, Ozbaran M, Askar F, Sakarya M, et al. Surgical Treatment in Aortic Dissection. GKD Cer Derg. 1995;3:147-152.
15. Konishi Y, Tatsuta N, Kumada K, Minami K, Matsuda K, Yamasato A, Usui N, et al. Dissecting aneurysm during pregnancy and the puerperium. Jpn Circ J. 1980;44(9):726-733.
16. Yuksel A, Erdur B, Turkcuer I, Aydin B. Tura P. Evaluation of Nonruptured Aorta Aneurisms and Dissections in Emergency Room: case series. Akademik Acil Tip Dergisi. 2008;7:17-20.
17. Yesilaras M, Sonmez N, Karcioglu O, Topacoglu H, Aksakalli S, Bayram B. Identification of Clinical Characteristics of a Patient Who Was Diagnosed with Aortic Dissection in the Emergency Room: Case Series. Turkiye Acil Tip Dergisi. 2006;6:1-6.
18. Jayaram A, Carp HM, Davis L, Jacobson SL. Pregnancy complicated by aortic dissection: caesarean delivery during extradural anaesthesia. Br J Anaesth. 1995;75(3):358-360.

