

DOI: 10.21767/2471-8505.100107

A Case of Painless Aortic Dissection

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Abstract

We recently encountered a case of a patient with painless aortic dissection presenting with transient weakness of lower limbs, dizziness, palpitation and discomfort in chest. His D-dimer increased remarkably. Initial diagnosis was hypertensive heart disease and then pulmonary embolism. Finally, by CT, he was diagnosing DeBakey I aortic dissection. Aortic dissection has much clinical feature not only severe pain in chest, especially in the aged. D-dimer always increases in aortic dissection.

Keywords: Aortic dissection; Painless; D-dimer

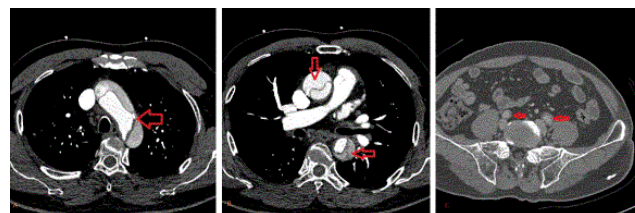
Introduction

Aortic dissection is a rare catastrophic disease. A survey showed that the incidence of aortic dissection is approximately 3 per 1,000,000 people per year [1]. A report indicated the mortality of aortic dissection without diagnosis and treatment in time, was 20%, 30%, 40%, 50% separately in 24 h, 48 h, 1 week and 1 month [2]. Therefore, early diagnosis and treatment is important. The most typical and common manifestation is severe chest pain [3]. However, around 5% aortic dissection occurs without any pain [4] and they are easy to be misdiagnosed and delay in treatment, which lead to bad prognosis and even death. Here, we presented a case of DeBakey I aortic dissection with transient weakness of lower limbs, dizziness, palpitation and discomfort in chest but without any report of chest pain.

Case Report

A 66 year old man with history of hypertension, presented to emergency room (ER) by ambulance with 5 h of transient weakness of lower limbs, dizziness, palpitation and discomfort in chest but without any report of chest pain. At arrival, his blood pressure was 171/89 mm Hg, his pulse was 80 beats/min; his respiration was 20 times per min and his oxygen saturation 99%. He was perfectly conscious and able to walk but felt dizziness, palpitation and discomfort in chest. Here ported that his lower limbs were suddenly weak and fell down. On physical examination, his face had some minor bruises, his cardiac

examination and his neurologic examination was without abnormality. An electrocardiogram (ECG) showed sinus rhythm with a 1-2 mm ST-depression in leads I, II, AVF, V4-V6 and T-wave inversion. The colour Doppler echocardiography showed the aortic regurgitation, tricuspid regurgitation, left ventricles hypertrophy. Computed tomography (CT) of head revealed that there was not any new infarction or haemorrhage. Serum levels of creatine kinase was 169 IU/L, CK-MB was 30.68 IU/L and troponin I were 0.063 µg/L, with increased D-dimer levels (66900 µg/L). He was diagnosed hypertensive heart disease. Sodium nitroprusside was used to lower his blood pressure. But he reported remission of dizziness but still palpitation and discomfort in chest. Routine observations showed a normal blood pressure, normal heart rate, oxygen saturation 99%. Because of remarkable increase of D-dimer, the medical team became concerned pulmonary embolus. The patients underwent CT pulmonary angiogram (CTPA). The CTPA showed DeBakey I aortic dissection extending from aortic arch to iliac artery (**Figure 1**). He was suggested to superior hospital.

**Figure 1** Computed tomography showing aortic dissection.

Discussion

The patient didn't have any pain in chest or back from onset to final diagnosis and his symptoms were multiple and atypical. The mechanism of painless aortic dissection is not clear. According to some studies, there were generally some reasons of painless aortic dissection. First, the blood passes into the aortic intima via a tear of the aorta's intima and create a false lumen which bulge to oppress artery intima. Because the innervation in intima is more than adventitia, so the feeling of pain is not obvious [5]. Second, aortic dissection is slowly progressive. Third, in the aged or the patients with diabetes, aortic surgery may damage innervation which leads to painless aortic dissection [6]. Fourth, the development of aortic

dissection affects the spinal artery with the spinal ischemia, which damages the sensory conductive fasciculus, and hence a decreased pain stimulation [7]. Fifth, the development of aortic dissection affects cerebral vessels, which leads to consciousness disorders or decreased pain threshold [8]. Sixth, a research indicates that the incidence of painless aortic dissection was higher in Stanford A type patients. In other words, the incidence of aortic arch involved in the painless group was significantly higher than that in the pain group [9]. This patient's aortic arch was affected.

Aortic dissection can press and obstruct the opening of the bifurcation of vessels, which leads to acute ischemia. The location of acute ischemia includes limbs (20%), kidneys (15%), myocardium (10%), brain (5%), mesentery and spinal (3%) [10]. Our patient had transient weakness of lower limbs. We considered it because of damaging spinal artery. Spinal artery is from vertebral artery and segmental artery (such as lumbar artery), one of which is Adamkiewicz artery, emitted from T8-12 spinal artery, is the main artery to supply blood for lumbar spinal. When the aortic dissection pressed and obstruct the opening of Adamkiewicz artery, patient can show weakness of lower limbs or paraplegia.

In this case, we should take attention to increased D-dimer. D-dimer, a product of cross-linked fibrin protein, will increase with thrombosis and plasminogen activation system. In aortic dissection, the blood passes into the aortic intima via a tear of the aorta's intima and create a false lumen. In the false lumen, blood coagulates into thrombus, which leads D-dimer to increase remarkable. International and domestic expert consensus indicated that D-dimer can be used to early diagnose and exclude aortic dissection [11]. Asha and Mier et al.'s [12] meta-analysis indicated that D-dimer < 0.5 ug/ml was help to exclude aortic dissection. Xiao et al. [13] analysed on 580 cases of aortic dissection and indicated that the level of D-dimer was relevant to the extent of tear. D-dimer < 0.5 ug/ml was help to evaluate prognosis. Our patient's D-dimer increased significantly, but we were not in consideration of aortic dissection. That means clinician don't take attention to the relation between D-dimer and aortic dissection, although the opinion was advanced for years. We showed this case also in order to let clinician to pay attention to the relation between D-dimer and aortic dissection.

Learning Points

Aortic dissection has many clinical features not only severe pain in chest, especially in the aged.

The patients with weakness of lower limbs with exclusion of nervous system disease should be careful aortic dissection.

D-dimer always increases in aortic dissection.

Acknowledgement

This study was supported by the All-Military Medical Technology 12th Five Year Plan optional topic project (BWS11J077); national utility model patent (ZL. 200920160376, ZL. 200920164343.6); Henan Province medical technology breakthrough project (201303221); Zhengzhou technological leadership personnel focal project (131PLJRC682).

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