



Pulmonary Artery Dissection after Trauma

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Abstract

Pulmonary Artery Dissection (PAD) is a rare finding and usually reported in the context of pulmonary arterial hypertension. Only a few traumatic dissections have been published in literature. We add another case of PAD in a patient after a fall from great height.

Case Report: We present a case of a 46-year-old woman who fell out of a window (estimated 8 meters of height) under unclear circumstances. She was stabilized at the scene of the accident and then transferred to our hospital for further diagnostics and therapy. An emergency whole body-CT (Computed Tomography) revealed multiple severe injuries including a small aortic dissection, complex fractures as well as dissection of the right main pulmonary artery. The dissection was managed conservatively and several follow-up CT scans showed no progression. The patient's fractures were successively treated surgically. Her general condition improved in the course of time and she could finally be transferred to outpatient care.

Conclusion: We present another rare case of traumatic pulmonary artery dissection.

Keywords: Pulmonary; Artery; Dissection; Trauma

Introduction

Pulmonary arterial dissection is a very uncommon finding, usually observed in pre-existing Pulmonary Arterial Hypertension (PAH) or secondary to aortic dissection [1-3]. It represents a serious complication with a high mortality. Until now traumatic cases are rarely described in literature [4-8]. We add another case of PAD after a fall from great height.

Case Presentation

A 46-year-old woman was found in a backyard of an apartment block under unclear circumstances. A fall out of a window (estimated height 8 meters), presumably with suicidal intent, was suspected. The emergency physician intubated the patient and inserted chest drainage on the right side due to suspected pneumothorax. The patient was transferred to the emergency department of our hospital (Klinikum Nuernberg South) for further diagnostics and treatment.

On arrival, the patient was circulatory stable but hypothermic (34.7°). Clinical examination showed evidence of multiple traumatic injuries, but no penetrating injury could be found. An emergency whole-body-CT, including a thoracoabdominal scan in portal venous phase, was performed. Multiple fractures could be detected (including complex midface and pelvic fractures, multiple rib fractures). In addition, the CT-scan revealed several thoracoabdominal injuries including a right side tension pneumothorax and lung contusion as well as focal intimal defects of the thoracic aorta in keeping with multiple intimal flaps. In addition, an irregular hypodense line in the right pulmonary artery was seen; this was suspected as being a dissection (Figure 1).

The patient was promptly re-examined for further assessment due to motion artifacts in the initial scan. For this purpose, a gated pulmonary CT was performed and clearly revealed a dissection membrane with adjacent thrombus formation in the right pulmonary artery (Figure 2). In addition, a small pulmonary embolus in the right lower-lobe-artery was detected (not shown). There were no signs of a mediastinal hematoma or pericardial effusion. The pulmonary trunk was norm-wide and there was no indication of right heart loading.

Due to the stable circulatory condition and the complex injuries, the aortic and pulmonary dissections were treated conservatively and the patient was continuously monitored. Tracheostomy was performed; anticoagulation was not initiated due to the estimated high risk of bleeding. Follow up-imaging with gated pulmonary-CT was performed on the next day and 26 days after the initial

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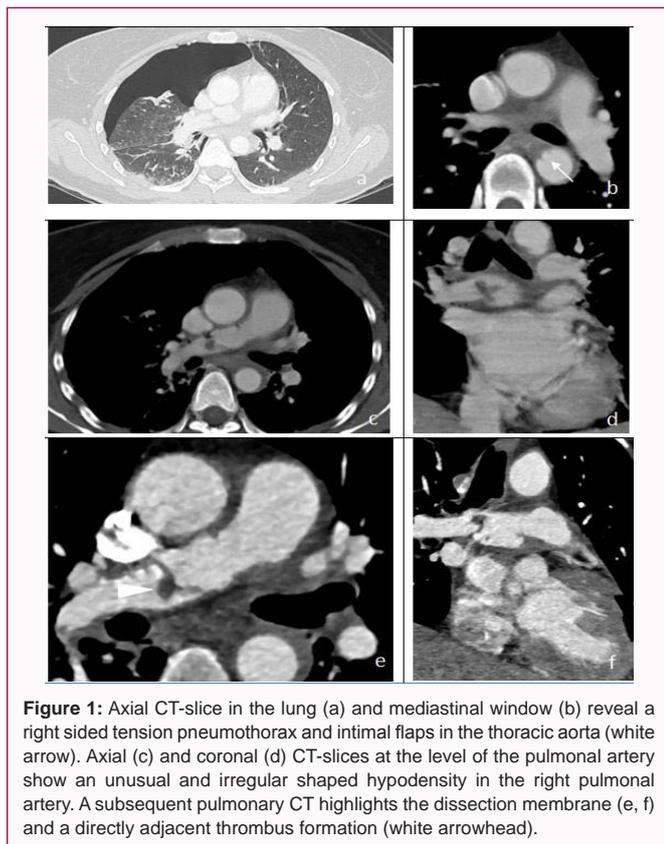


Figure 1: Axial CT-slice in the lung (a) and mediastinal window (b) reveal a right sided tension pneumothorax and intimal flaps in the thoracic aorta (white arrow). Axial (c) and coronal (d) CT-slices at the level of the pulmonary artery show an unusual and irregular shaped hypodensity in the right pulmonary artery. A subsequent pulmonary CT highlights the dissection membrane (e, f) and a directly adjacent thrombus formation (white arrowhead).

scan (Figure 2). The scans showed narrowing of the dissection membrane and regression of the adjacent clot formation. The fractures were successively treated surgically. The patient's condition gradually improved, the chest tube was removed and the patient could be extubated. Further treatment in a psychiatric facility was deemed necessary and she could be transferred to an outside psychiatric ward 28 days after the initial trauma.

Discussion

PAD has mainly been described in the context of chronic PAH and extensive aortic dissection so far [1-3]. In addition, there are reports of iatrogenic dissection after the insertion of pacemakers or catheters [9,10].

Trauma-related pulmonary artery injuries, as in our case, are very rare and in most cases due to penetrating injuries. In our case, there was no penetrating trauma and only a pulmonary artery dissection without secondary hemorrhage or rupture was found.

The differential diagnoses in our case include pulmonary transection as well as motion artifacts or atypical thrombus formation, which could be excluded with confidence in the immediate re-examination with gated pulmonary CT.

Possible treatment options include interventional procedures, surgery as well as conservative treatment. Though there are no stringent guidelines for managing PAD yet, recent literature suggests conservative treatment in circulatory stable patients without signs of rupture or bleeding [8,11]. Our case report supports these recommendations, the PAD in our patient showed a stable course and even slight improvement of findings in the final CT-scan.

Conclusion

We present another rare case of traumatic pulmonary artery

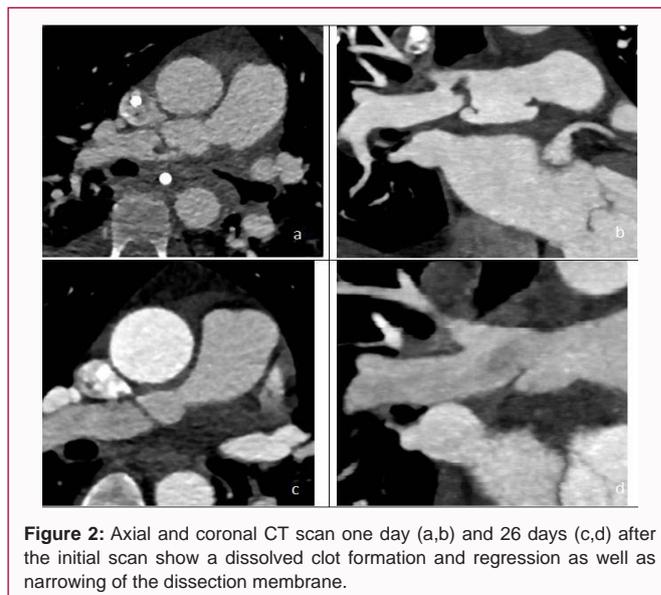


Figure 2: Axial and coronal CT scan one day (a,b) and 26 days (c,d) after the initial scan show a dissolved clot formation and regression as well as narrowing of the dissection membrane.

dissection. Our case and the currently available literature point toward a conservative treatment in circulatory stable patients if there are no signs of bleeding or pending rupture.

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