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Case Report

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A Case of an Ulcerative Plaque and Disruption of the Main Pulmonary Artery Architecture

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ABSTRACT

A 75-year-old Caucasian male with no remarkable past medical history presented to the emergency department complaining of shortness of breath, chest pain, and dyspnea on exertion. His presentation prompted a computed tomography angiogram with reconstruction of the mediastinum (CTPA) and upon review of the image, a splitting or dissection of the main pulmonary artery was seen (Figure 1).

This case is unique because it is potentially the first discussion of MPA dissection not due to COPD or CHF but lymphadenopathy caused by neoplasms and great vessel remodeling. Generally, main pulmonary artery (MPA) dissection is seen in patients with congenital heart defects and primary pulmonary hypertension but in this case, lymphoma is viewed as a possible cause due to the patient's medical history indicating abdominal aorta lymphadenopathy and ulcerative plaques. MPA dissection has been linked to congestive heart failure or COPD in past cases but our patient in this case did not present with any findings linked to those conditions. The patient had little evidence of MPA dissection on prior readings on images done 6 months and 12 months ago– and the current presentation was only discovered incidentally. Our patient was stable and presented with unrelated symptomatology associated with MPA ulceration. It can explain otherwise labeled idiopathic causes of MPA dissection and has the potential to inform physicians and save lives.

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Introduction

Main pulmonary artery dissection is an exceedingly rare occurrence with often devastating consequences, given its propensity to manifest as cardiogenic shock or sudden cardiac death, and is most commonly identified postmortem [1]. Main pulmonary artery dissection is rare and often fatal, but generally seen in the contexts of primary pulmonary hypertension and congenital heart defects1. Still, there have been reported cases of idiopathic pulmonary arterial dissection [2]. In this case, past medical history does not point in the direction of hypertension but rather to ulcerative plaques and abdominal aorta lymphadenopathy with a different underlying etiology. Lymphoma is suspected to be the cause and the link between lymphadenopathy and dissection.

Arterial dissections are relatively common and involve arterial lining tearing that can be due to damage from multiple etiologies such as hypertension, trauma, or plaque formation, and are a recognized cause and often non-fatal result of primary hypertension. In contrast, pulmonary artery (PA) dissection is usually lethal and can be a complication of chronic pulmonary hypertension. PA dissection often leads to the expiration of the patient and presents quickly prior to the demise of the patient [3]. This case describes a patient who presents unusually, as the patient was stable when the dissection of the MPA was discovered. In the rare previous cases of MPA dissection, the etiology was linked to chronic obstructive pulmonary disease or congestive heart failure; neither of which is seen in the case presented. While MPA dissection is rare and an idiopathic disease progression, with lymphadenopathy around the abdominal aorta; there is potation for plaques on the MPA to lead to MPA dissection.

Lymphadenopathy occurs due to an increase of cells within lymph nodes, which can be of either neoplastic or inflammatory origin. It is generally not malignant with a prevalence of 1.1% of cases presenting with unexplained lymphadenopathy [4]. Here, we present a case of MPA dissection in a patient who appears to be stable upon presentation and to be experiencing a rare presentation related to possible ulceration of the MPA in association with his concurrent lymphadenopathy.

Case

A 75-year- old Caucasian male with no remarkable past medical history presented to the emergency department complaining of shortness of breath, chest pain, and dyspnea on exertion. His presentation prompted a computed tomography angiogram with reconstruction of the mediastinum (CTPA) and upon review of the image, a splitting or dissection of the main pulmonary artery was seen (Figure 1). A prior read did not note this possible dissection on imaging that was done six months and one year ago but was

present on greater examination of the previous studies. Upon reading the prior imaging, a faint dissection was visualized.

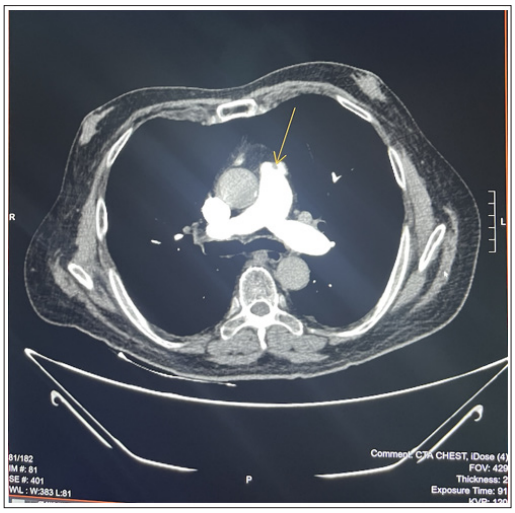

Figure 1: Computed Tomography(CT) showing MPA dissection

The main pulmonary artery splitting could be related to an ulcerative plaque on the great vessel. This etiology of an ulcerative plaque on the main pulmonary artery could be related to other pathologies present in the patient and may be related to abdominal lymphadenopathy. Further workup of the patient to reveal an underlying pathology must be done.

On concurrent abdominal imaging, this patient was found to have possible regional lymphadenopathy surrounding the thoracic aorta (Figure 2). This lymphadenopathy has been identified on previous exams and must be worked up further.

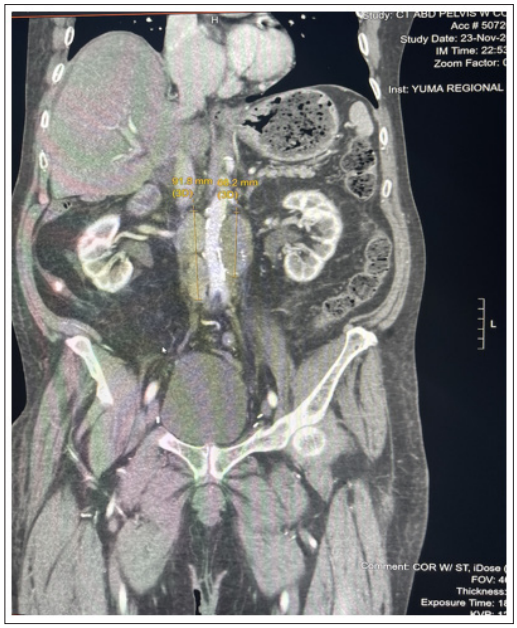

Figure 2: CT Showing Bilateral Abdominal Aorta Lymphadenopathy

This case presents an exceedingly rare example of MPA dissection that does not seem to be related to an underlying cardiac pathology as seen in a stable patient presenting with simply shortness of breath and dyspnea on exertion. Further tests and imaging needs to be performed to understand the correlation between the plaques and lymphadenopathy.

Discussion

Idiopathic MPA dissection in a stable patient is an exceedingly rare pathology that should prompt further work-up. This particular case represents an example of MPA dissection with an etiology related to concurrent lymphadenopathy. There are previous reports of a patient with known Small lymphocytic lymphoma/ Chronic lymphocytic leukemia (SLL/CLL) who presented with thoracic aortic dissection and multiple large mediastinal lymph nodes with no other risk factors for such. SLL/ CLL are two highly inflammatory malignancies that are extremely damaging to native vessels. In that previous case, it was theorized that malignant lymphocytes could have released damaging inflammatory cytokines that could have vascular damage, remodeling, and subsequent dissection [5]. We hypothesized that in our case, MPA dissection could be due to a similar etiology. This case represents an example of a distinct MPA architecture disruption that could be related to concurrent lymphadenopathy. The unique etiology of this MPA dissection represents a possible overlooked patient population.

Further studies that can understand the connection between lymphoma and other neoplastic conditions should be done in order to have a greater understanding of the risk factors for possible MPA dissection or remodeling. In addition to plaque ulceration of the MPA, there is reason to suggest that the cytokine involvement in neoplastic patient populations could lead to the remodeling and or destruction of the great vessels. Due to the unusual presentation in this patient, it is recommended that patients who present with lymphadenopathy be screened for great vessel involvement in order to prevent patient expiration or missing a case of MPA dissection.

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