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Intrathoracic Gossypiboma: A Case Report

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Abstract

Gossypiboma is a surgical complication caused by a foreign body, mostly composed of cotton swabs, gauze or compress, which were left accidently in patients' body after a procedure. The clinical examination is variable, which may include from asymptomatic patients to sepsis. It is often misinterpreted during diagnosis which may lead to delay in defining a correct intervention. In this case report we describe a thoracic gossypiboma after 30 years from the primary surgical intervention. We highlight the patient symptoms when admitted to the hospital, the exams pipeline which helped unveil the case of a gossypiboma, and the rationale behind the intervention decision. Computed Tomography images were conclusive for supporting the clinical decision and to guide the surgical intervention.

Keywords: Gossypiboma; Textiloma; Surgical complication; Foreign body

Introduction

Gossypiboma, can also be recognized as textiloma, which defines the presence of surgical material (e.g., cotton swabs, bandages etc.) left in the body after a procedure. The foreign material elicits a granulomatous reaction in response to the local inflammation [1,2]. The word "Gossypiboma" derives from the Latin language Gossypium and means "cotton", but also from the Kiswahili boma, "local of occultation" [2]. The first report of secondary complications caused by surgical material dates from 1884, and was described by Wilson. Nowadays, the increase in the occurrence of Gossypibomas can be explained by the number of emergency surgeries performed, especially in obesity cases [3]. Although increased, these surgical complications are rare, particularly for intrathoracic cases. Additionally, in the current literature the described gossypiboma diagnosed several years after the primary surgery are thoracic ones [3]. The clinical conditions described on those occurrences vary from mild cases to severe ones, where fever, dyspnea, abscesses, fistula and perforations are found [4,5]. The diagnosis usually happens during the intraoperative monitoring [5]. However, tomographic exams can reveal with precision the gossypiboma formation and support in the clinical decision [6,7]. In fact, due to the low occurrence of such a rare pathology, it is often underreported, which may lead to inaccurate diagnosis and lack of adequate treatment [8]. Therefore, herein we describe a case of thoracic gossypiboma evidenced in the Hospital das Clínicas, a university hospital of São Paulo, Brazil. The reported case was identified 30 years after the thoracic surgical procedure, and the need of a complicated surgical intervention.

Case Presentation

The patient presenting the thoracic gossypiboma was a 47 years old male, smoker, and with drug abuse history. The patient was admitted to the emergency room suffering from fever, cough with hemoptysis, dyspnea, and chest pain. The patient had been treated with antibiotics and presented partial improvement. After preliminary insights given by X-ray exams (Figure 1A, 1B), a chest tomography (Figure 2A, 2B) was performed and revealed a heterogeneous mass in the right hemithorax parenchyma.

This patient clinical data confirmed a previous surgery of laparotomy to remove a gunshot projectile in the early 90s, where hepatic, diaphragm and colon lesions were identified on that occasion. However, further details in regards to the surgical approach were not available. After a joint case discussion with the thoracic surgery and radiology team, we opted for a video thoracoscopy approach. In the intraoperative period, given the technical difficulty due to pleural adhesions near the right diaphragm, it was decided to perform the thoracotomy procedure as well as a middle and lower right lobectomy. Upon inspection of the surgical specimen, we identified a disintegrating

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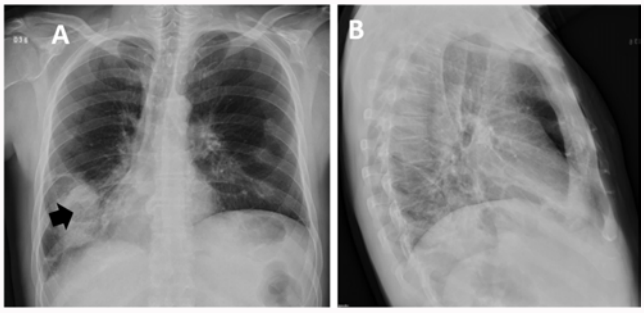

Figure 1: Posterior anterior and lateral chest X-rays (A and B, respectively) show a well-defined rounded lesion in the projection of the right lower lobe, associated with discrete parenchymal bands (black arrow). There is a slight deviation of the mediastinal structures to the right, as well as mild elevation of the left diaphragm.

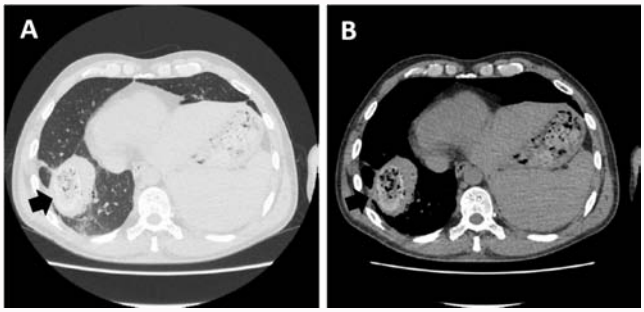

Figure 2: Chest computed tomography with lung (A) and mediastinal (B) windows reveals a well-defined hyperdense mass in the right lower lobe, demonstrating central air bubbles in a "spongiform" pattern (black arrow). It is also possible to notice volume loss of the right lower lobe with mild mediastinal shift and elevation of the left diaphragm.

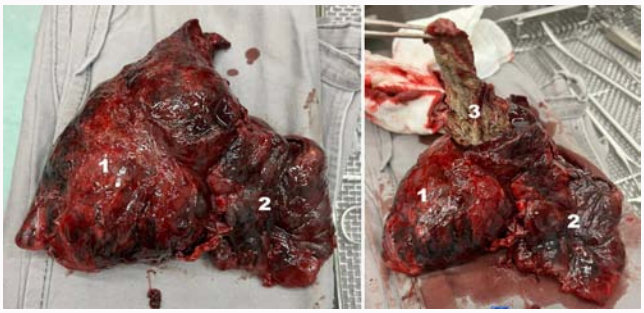

Figure 3: 1: Surgical resection specimen of inferior lobe of right lung; 2: Surgical resection specimen of medial lobe; 3: Disintegrating surgical sponge with purulent fluid.

surgical compress associated with purulent fluid (Figure 3).

In the postoperative period, the patient presented a condition compatible with pulmonary sepsis, requiring vasoactive drugs and antibiotic therapy for gram-negative and anaerobes. In less than 24 h, the patient presented loss of consciousness and worsening of breath, requiring intubation. A bronchoscopy procedure revealed a secretion occluding the right main bronchus, justifying the intercurrence. After aspiration of the secretion plus use of antibiotics therapy, the patient evolved with progressive clinical improvement, with interruption of vasoactive drugs, as well as successful extubation after 72 h of the procedure. He was discharged, without the need of oxygen support or any identified clinical sequelae (Figure 4A, 4B).

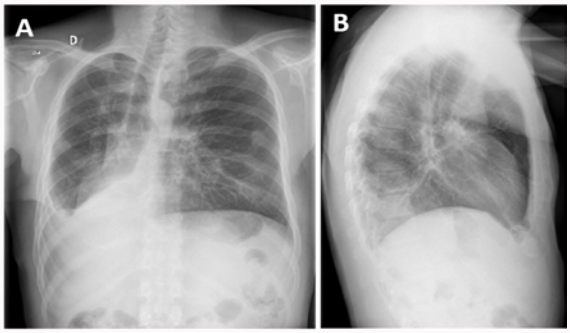

Figure 4: Posterior anterior and lateral post-surgical chest X-rays (A and B, respectively) demonstrate volume loss of the right lung with ipsilateral mediastinal shift, associated with opacification of the right lower zone and a small pleural effusion.

Discussion

Gossypiboma is described as the presence of a foreign body, usually a surgical compress or gauze, which induces a local inflammatory reaction [2,5]. It is a rare pathology being reported with a frequency between 1/1000-1/10,000 performed surgeries [1,4]. This data can be underestimated, since it involves medical error and legal implications [8]. Furthermore, the data found in the literature are based on old studies, and the real incidence in the last decade is practically unknown. In addition, case reports on Gossypibomas in the chest are much less frequent than in other body sites, while the abdomen is the most frequent ones [1,3]. Regarding only intrathoracic sites, descriptions in the pleural and pericardial cavities are the most frequent ones [7,8].

Surgical pads and gauze are usually made of inert cotton, thus not stimulating specific inflammatory reactions and granuloma formation in the body. For this reason, many patients remain asymptomatic for long periods, with descriptions reporting intervals of up to 47 years until diagnosis of gossypibomas [3]. However, in some cases, there is a predominantly exudative response, which may evolve to a secondary infection and abscess formation or fistulization [2,9].

By understanding the pathophysiology of gossypiboma, the broad symptomatology of this group of patients becomes clear. Machado et al. in a Brazilian observational study involving 16 cases of gossypiboma, chest pain was the most prevalent symptom described (68.75%), followed by cough (56.25%) and dyspnea (25%), while only one patient was asymptomatic (6.25%) [5]. Similar cases have been reported worldwide, for instance, Cheng et al. in a review of six cases, described that only two (33.3%) were asymptomatic [2].

Chest computed tomography is the best diagnostic method to detect gossypibomas and the associated complications, especially when radiopaque markers are used. The radiological alterations usually found in gossypibomas are well-defined masses with hyperdense margin, with central air bubbles and a swirl-like pattern (curvilinear stripes with high density) [1,2,4]. Over time, the air trapped in the cotton fibers of the foreign body, responsible for the classic spongiform pattern, can be reabsorbed, and the lesion, in this case, appears as a solid hyperdense mass. The radiopaque marker in this later phase is essential to help differentiate the gossypibomas from other masses, for example, neoplasms or hydatid cysts [2,8]. In some cases, however, there is persistence of bubbles despite a long-time interval, and a differential diagnostic of aspergilloma,

intrapulmonary abscess or bronchiectasis may be considered [10,11].

Other imaging methods, such as chest X-ray, ultrasonography, magnetic resonance imaging and Positron Emission Tomography (PET-CT) have already been described as alternatives for gossypiboma diagnosis, however, all with nonspecific findings [6,8]. Percutaneous biopsy of the mass can be performed, which usually shows cotton fibers, confirming the diagnosis of Gossypiboma based on computed tomography imaging. However, the biopsy becomes unnecessary after a conclusive diagnosis of gossypiboma, since the only therapeutic alternative is the surgery to remove the mass [5,6].

Conclusion

Intrathoracic gossypiboma is a rare pathology, often unknown and not promptly recognized by the doctors. Misinterpretation leads to unnecessary interventions and delays in the surgical approach, which may increase the risk of more complications, such as formation of abscesses or fistulas. Thus, the gossypiboma diagnosis supported by imaging exams (especially by computed tomography) and early intervention, together with patient safety policies during surgeries, are essential in order to avoid this condition and its potential complications.

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