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Successful coronary artery bypass surgery in an elderly patient with giant air cyst in the left lung

Abstract

Lung air cysts and bullae are airborne cavities larger than 1 cm in diameter, surrounded by a thin wall, localized within the lung tissue. The bullae are often located apically in the lung. They are usually asymptomatic unless they are very large in size and are detected on chest X-ray or lung tomography. In this article, we present an asymptomatic 79-year-old male patient who was randomly detected as having an air cyst in the anterior segment of the upper lobe of the left lung during the preparation for coronary bypass. We did not find similar cases in PUBMED literature review.

Keywords: Lung air cyst, computed tomography, coronary artery bypass grafting

INTRODUCTION

Lung air cysts and bullae are airborne cavities larger than 1 cm in diameter, surrounded by a thin wall, localized within the lung tissue. The bullae are often located apically in the lung. They are usually asymptomatic unless they are very large in size and are detected on chest X-ray or High Resolution Computerized Tomography (HRCT) (1). Bullae are more common in smokers and settle more often in the upper lobes. The incidence in the right lung is 2 times higher than in the left lung (2). Lung bullae and air cysts are an important disease because they reduce gas exchange, susceptibility to infection and possible complications. Complications of bullous diseases of the lungs are infection of the bullae, chest pain, bleeding, spontaneous pneumothorax and lung cancer. We will present the lung air cyst and coronary bypass surgery process that we randomly detected in a 79-year-old male patient admitted to the service for coronary bypass surgery. We did not find similar cases in our literature review.

CASE

A 79-year-old male patient who was admitted to the emergency department with chest pain underwent coronary angiography with the diagnosis of non-ST myocardial infarction. As a result of coronary angiography, coronary artery bypass grafting

operation was planned. The patient had no history of smoking, known lung disease, or co-morbidity. The patient had a 16-year history of cleaning the diesel tank. His physical examination was normal. Oxygen saturation was measured as 97% in the pulse oximeter. His electrocardiogram was in a normal sinus rhythm. In transthoracic echocardiography; EF 55, Mild Mitral Insufficiency was detected. Respiratory function test (PFT) parameters were FVC: 3.11 (109%), FEV1: 2.68 (126%), FEV1/FVC: 118%, FEF25-75: 133%. PA Chest X-ray revealed calcification of the aortic knob and a bullae-like appearance in the upper lobe of the left lung (Figure 1). Thorax CT revealed an air cyst (Figures 2,3) of 83mm at the widest point of the anterior segment of the upper lobe of the left lung. The patient was prepared for the operation. The patient underwent off-pump 3-vessel coronary bypass surgery. The internal thoracic artery (ITA) was not used to open the thoracic cavity in the patient. Saphenous vein graft was used. He was extubated without any problems at the tenth hour of the post-operation. Post-extubation saturation was around 95%. Post-operation was put into service on the 1st day. There was no problem in the intensive care unit and service follow-up of the patient. There was no pneumothorax on the PA chest X-ray taken at the post-operation and the patient who did not develop respiratory and cardiac pathologies in the service follow-up was discharged on the 6th day of the post-operation.

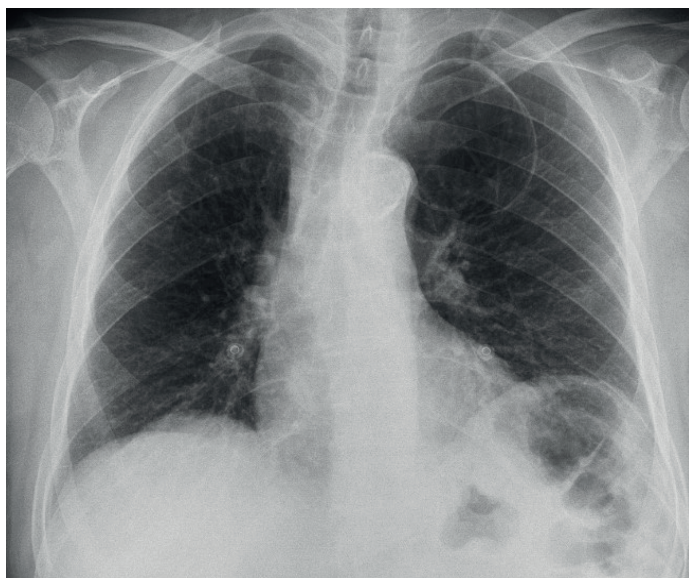


Figure 1. Giant cyst at the top of chest x-ray

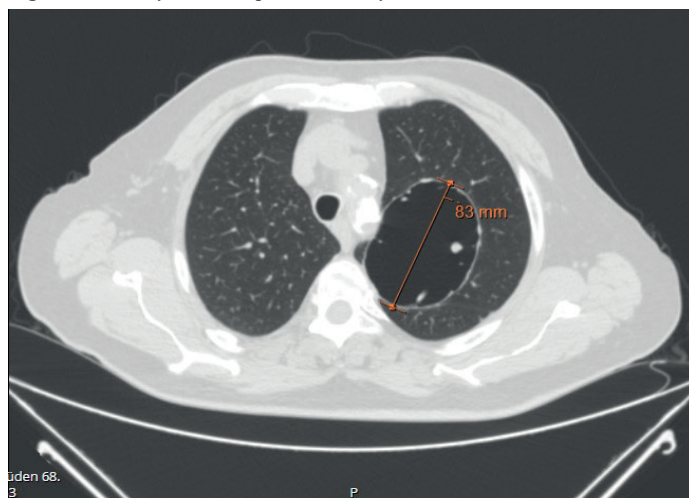


Figure 2. Giant cyst seen on CT



Figure 3. Giant cyst seen on CT

DISCUSSION

Lung air cysts are not a common lung pathology and may be asymptomatic as in our case. They may not cause clinical signs unless they are ruptured. If they rupture, they may cause complications such as blood pressure, pneumothorax, mediastinal shift, etc., postoperative prolonged intubation times, and additional interventional procedures.

Patients with an air cyst detected in the lung are recommended to use a double lumen intubation tube when intubated for surgery, and if the cyst ruptures during surgery, the side where the cyst is located can be extinguished and intervened quickly and easily. Mechanical ventilation settings during operation and intensive care unit follow-up; Tidal volume was kept as 550ml, respiration rate as 15, PEEP as 5 cmH₂O, FIO₂ as 50%. Patients with pneumothorax during surgery or postoperative follow-up should first undergo clinical evaluation. In the case of tension pneumothorax, deviation of the trachea towards the opposite side, tachycardia, hypotension, and sweating can be seen. In these patients, decompression with an angiocatheter is urgently required followed by ipsilateral chest tube insertion. In stable patients, the degree of pneumothorax should be followed up by clinical and radiological follow-up or chest tube insertion. Surgical options may come into play in cases such as persistent air leakage (>3-5 days) or complete reexpansion of the lung with chest tube drainage. In this case; wedge resection, pleurodesis, and pleurectomy operations can be performed (3). In our case, we took care not to open the pleura while performing sternotomy. Due to the advanced age of our patient, we did not use a left ITA graft to prevent the thorax and possible lung injury.

During general anesthesia, the physiological functions and gas exchange of the lungs are impaired, the mechanics of the chest wall change, diffuse atresias may develop while diaphragmatic relaxation occurs, and ventilation-perfusion rates are impaired (4). Intraoperative and postoperative mechanical ventilation settings of patients with air cysts should also be carefully monitored to prevent cyst rupture.

In giant bullae and air cysts, blood gases can be in normal values, and pulmonary function tests can usually be found normal until the bullae cover 1/3 of a lung. In cases with large air cysts sufficient to compress healthy lung sections, an obstructive and sometimes restrictive pattern can be seen in PFT (5). In our case, PFT values were evaluated as normal.

Although lung air cysts are rare, they can be detected during preop preparations. Patients with preoperative lung air cysts should be discussed among chest diseases, thoracic surgery, and related surgical branches to decide whether cyst resection or the operation to be performed is a priority, and the profit-loss ratio should be approached by considering the profit-loss ratio. During the operation, the anesthesiologists and the surgical team should work in harmony, the patient should be followed up cooperatively during the postoperative intensive care unit stay and mechanical ventilation should be managed as carefully as possible.

As in our case, performing coronary bypass surgery on the beating heart has the advantages of performing coronary bypass surgery on the beating heart in cases where coronary bypass surgery is required primarily, the operation time is shorter, the exposure time to general anesthesia is reduced, the lungs are ventilated within normal physiological limits during the operation period and recruitment maneuver is avoided. In our literature review, we did not detect a case similar to our case.

CONCLUSION

If detailed physical examination and tests are not performed before surgery, the risk of postoperative complications of the patient is inevitable. As in our case, thanks to the image on the patient's chest x-ray and the tomography taken later, the patient's surgery plan was made according to these conditions and our patient did not develop any complications related to this.

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