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Late Onset Dysphagia Secondary to Post-Pneumonectomy Syndrome, a Rare Complication

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ABSTRACT

Postpneumonectomy syndrome reflects extrinsic compression of the distal trachea and main stem bronchus due to shifting of the mediastinum and hyperinflation of the remaining lung. The syndrome is characterized by development of progressive dyspnea, cough, inspiratory stridor, and recurrent pneumonia in patients at least 6 months after surgery. We report a case of late onset dysphagia secondary to post-pneumonectomy syndrome, nine years after right pneumonectomy. It is a rare complication and there are only two similar reports in the literature. (Tanaffos 2008; 7(2): 71-74)

Key words: Postpneumonectomy syndrome, Dysphagia, Complication, Pneumonectomy

INTRODUCTION

The classic description of postpneumonectomy syndrome (PPS) is a late complication of right pneumonectomy occurring between a few months and many years after pulmonary resection (1). It is caused by excessive mediastinal shift and rotation after right or left pneumonectomy in the presence of a right aortic arch. This results in compression of the distal trachea and left mainstem bronchus across either the aorta or vertebral column. A similar phenomenon after left pneumonectomy has been reported first only in the presence of a right aortic arch (2). Later, it was reported with normal position of the aorta (3,4).

We report an unusual presentation of postpneumonectomy syndrome with dysphagia

secondary to esophageal compression nine years after right pneumonectomy.

CASE SUMMARIES

A 54-year-old man presented complaining of dysphagia. He had undergone right pneumonectomy because of hemoptysis from aspergilloma nine years ago. On admission, the chest x-ray showed postpneumonectomy changes with mediastinal shift to the right (Figure 1). Barium swallow showed esophageal compression between left main bronchus and vertebra (Figure 2A). Chest CT-scan demonstrated mediastinal shift to the left and a distended proximal esophagus compressed between the left main bronchus and vertebra (Fig. 2B). Gastroscopic examination of the esophagus showed an extraluminal compression without intraluminal pathology. Fiberoptic bronchoscopy revealed secretion with an intact previous pneumonectomy stump. We suggested mediastinal repositioning or insertion of esophageal stent but the patient refused and was discharged.

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Figure 1. Chest radiograph shows postpneumonectomy changes on the right side with calcification and rightward deviation of the trachea.



Figure 2A. Barium esophagography showing the trachea and esophagus on the right side then the esophagus crossed to the left, where barium is cut due to compression of esophagus between left main bronchus and spine.



Figure 2B. Chest CT scan showing over-expansion and anterior herniation of the left lung and compression of the esophagus between the left main bronchus and spine

DISCUSSION

PPS is a delayed complication seen primarily in children and young adults within a year after surgery (5). Most cases of PPS have been described as occurring after right pneumonectomy, when the powerful negative pressure of the involved hemithorax and over-expansion of the remaining lung move the mediastinum rightward. As the over expanded lung further displaces the mediastinum toward the right side, the heart descends in the hemithorax and rotates counterclockwise along its main axis. The trachea also is displaced toward the right side, with resultant stretching of the left main bronchus, which is compressed downward by the aortic arch and the left main pulmonary artery (5).

The syndrome is characterized by development of progressive dyspnea, cough, inspiratory stridor, and recurrent pneumonia in patients at least 6 months after surgery. It occurs later than 6 months following surgery and has even been reported 35 years after the surgery (6). The current report describes a patient with dysphagia 9 years after right pneumonectomy. Thorax CT-scan, barium swallow and gastroscopic examination clearly demonstrated that there was an

extrinsic compression of the esophagus, without any luminal pathology. To our knowledge, there are only two reports of postpneumonectomy esophageal compression.

Yuksel et al. (7) reported dysphagia secondary to compression of esophagus between inferior vena cava and descending aorta 12 years after right pneumonectomy. Bedard et al. reported 4 cases of PPS. In one of them, esophagus was compressed between the left atrium and descending thoracic aorta one year after left pneumonectomy (1).

A more acute course has been presented in the pediatric literature. Children may be at risk given their increased mediastinal mobility and lung compliance (2). Our patient can be ascribed to relative mediastinal immobility in older age.

A wide variety of treatment options have been described for these patients, including simple bronchial stent insertion to aortic division and bypass grafting in addition to mediastinal repositioning. Muscle-flap transposition, pericardial fixation, and plombage, have been used (1,8,9). Currently, published reports describing the use of prostheses to maintain mediastinal position appear to most often use approximately one liter of fluid. Over-correction of mediastinal position is possible in this scenario, resulting in symptoms from compression of the remaining lung parenchyma. Shamji et al. (3) described a patient requiring a redo thoracotomy on 5th postoperative day after symptoms worsened following repositioning and the instillation of 1600 mL of saline in prostheses. In our case, the esophagus, instead of the bronchus was the affected structure and it may be speculated that these surgical methods would also be effective to relieve esophageal compression. Bedard et al. (1) described a patient whose dyspnea after left pneumonectomy resolved by repositioning. However, an onset of dyspnea occurred and forced vital capacity (FVC) decreased from 82%

predicted to 48% predicted. Non-surgical palliative treatment methods for malignant and benign intrinsic or extrinsic esophageal obstructions and strictures include dilation, laser vaporization and other thermal methods, alcohol injection as well as stent insertion. None of these procedures are well-tolerated long-lasting methods. Many studies reported the usage of covered stents in treatment of tracheoesophageal fistulas and esophageal perforation with success rates of 80–100%, with low perforation risk and greater internal diameter of 20–25 cm, resulting in better relief of dysphagia (7).

CONCLUSION

We report a case of late onset dysphagia secondary to post-pneumonectomy syndrome which is a rare complication. In addition to the bronchial compression seen in PPS, other anatomic structures, such as the esophagus, can also be affected by the excessive mediastinal shifting which should be kept in mind.

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