Late Mediastinal Shift After Repeated Aspiration of Postpneumonectomy Seroma*

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Development of a postoperative seroma is a frequent complication after muscle-sparing thoracotomy. We describe an unusual case of late mediastinal shift in a patient in whom our original plan to perform a limited muscle-sparing thoracotomy was abandoned. The procedure was converted to a standard posterolateral incision to perform a pneumonectomy for a large central carcinoid tumor with extrabronchial extension. Fluid that accumulated in her pneumonectomy space presumably shifted into the dissected tissues of her chest wall, and was then drained repeatedly by her local physician in the time interval between 2 weeks and 3 months after surgery.

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Key words: bronchial carcinoid; mediastinal shift; postpneumonectomy seroma

Considerable debate surrounds the relative merits of standard posterolateral and muscle-sparing thoracotomy for pulmonary resections. Advocates of the latter contend that the technique allows for more rapid recovery of respiratory function, better arm and shoulder mobility, and a more watertight seal of the chest because incisions in the chest wall are not superimposed. They also claim that the incision is more cosmetic and can be rapidly approximated. As in other procedures, which involve extensive mobilization of muscle and subcutaneous tissue, the development of a postoperative seroma is a relatively common complication.1 In this report, we describe a patient whose left muscle-sparing thoracotomy was converted to a posterolateral incision, with division of the latissimus dorsi and sparing of the serratus anterior. The patient was returned to the care of her local physician 2 weeks after surgery, after we had performed aspiration of approximately 200 mL of seroma fluid to relieve a pressure sensation over her incision. When she returned to our medical center 6 months after surgery for follow-up of her carcinoid tumor, chest radiography revealed that the pneumonectomy space was almost empty, and the left heart border was almost at the left chest wall.

Case Report

A 36-year-old woman with an 8-month history of dyspnea was referred to a pulmonologist in our medical center for evaluation. Findings included postobstructive pneumonitis of her left lower lobe and bronchoscopic documentation of a smooth yellow mass completely occluding the orifice of the left lower lobe bronchus. Biopsy revealed typical carcinoid tumor. CT revealed no obvious evidence of involvement of the hilar structures and a postobstructive pneumonia. The patient’s medical history was significant only for the occurrence of non-small cell lung cancer in her mother and grandmother. After extensive discussions with the patient concerning endoscopic removal of the mass, the patient requested surgical resection and was referred to the thoracic surgery service.

Because of our impression that the tumor could be removed by bronchotomy or lower lobectomy, we performed a muscle-sparing thoracotomy. However, on exploration of the chest, there was extrabronchial extension, and the mass was firmly adherent to the central hilar structures. We deemed that pneumonectomy was necessary for safe and effective removal and elected to enlarge the incision to avoid vascular injury. The incision was extended posteriorly, and the latissimus muscle was divided. The previously dissected serratus anterior muscle was easily retracted. An uneventful pneumonectomy was performed, and the chest was closed in a standard fashion. Large Jackson Pratt drains were placed behind and in front of the chest wall muscles and kept on suction for 4 days postoperatively. After the drains were removed, she exhibited a seroma, which was aspirated of 200 mL on one occasion. She was discharged from the hospital on postoperative day 9. She returned for routine surveillance on postoperative day 12. Chest radiography at that visit demonstrated normal right lung expansion, essentially midline mediastinal structures, and an appropriate fluid level in her pneumonectomy space (Fig 1). At that visit, a moderate-sized chest wall seroma was aspirated of approximately 200 mL of serosanguinous fluid.

The patient returned to our clinic 6 months later for follow-up of her carcinoid tumor. She had no complaints and was markedly less dyspneic than at her initial presentation. On examination, there were no unusual findings and no chest wall seroma. Her neck veins were flat. However, chest radiography revealed that there was marked mediastinal shift to the left (Fig 2). CT scan did not demonstrate tumor recurrence. On careful questioning, the patient admitted that her local physician had performed repeated aspirations of the seroma (several 30-mL syringes full on each of three or four occasions).

Discussion

Because of the considerable morbidity associated with the standard posterolateral thoracotomy technique, several alternative surgical approaches to lung resection have been developed. The usual muscle-sparing incision involves creating subcutaneous flaps and mobilizing the anterior border of the latissimus from the superior aspect of the axilla toward its inferior insertion at the iliac crest. The serratus anterior can


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be visualized after retraction of the latissimus. It is mobilized from the tip of the scapula to the anterior aspect of the sixth rib. After the operative procedure, no muscle closure is required, and the muscles are allowed to resume their normal positions. A closed suction drain is routinely placed to evacuate fluid from beneath the subcutaneous flaps. As previously mentioned, the debate of whether or not muscle-sparing incisions offer any mechanical advantage to patients in comparison with a traditional muscle-splitting thoracotomy has been resolved. It is intrinsically appealing for both patients and surgeons to use a smaller and minimally invasive incision. Cosmetically, these incisions can be more appealing, and sparing the latissimus dorsi provides an effective means of handling postoperative space and bronchopleural fistula problems should they arise.

Postoperative seroma is a known complication of this extensive mobilization, occurring in 2 to 23% of patients undergoing this type of thoracotomy. Many authors have treated these seromas with observation alone, although standard aspiration remains an equally acceptable alternative. In this patient, the pneumonectomy fluid probably emptied into the space occupied by the incisional seroma, resulting in a dramatic shift of the mediastinum. Presumably, the intercostal space was not watertight, and the fluid simply seeped out into the subcutaneous space. Fortunately, she remained asymptomatic and did not develop respiratory embarrassment.

It is likely that this complication would not have developed had we used one of the newer muscle-sparing techniques that do not involve extensive subcutaneous dissection. In addition, we would have advised the referring physician not to aspirate the seroma, had we been made aware of its recurrence. A chest binder could have been used to treat the patient’s discomfort.

We report this case to warn physicians managing complications of thoracotomy. Had we managed the patient ourselves (she lived 200 miles away), we would not have aspirated the seroma repeatedly. Extensive dialogue between referring physicians and surgeons is necessary if such problems are to be avoided. Fortunately, our patient did not develop serious sequelae such as infection or superior vena cava obstruction, but such complications could occur in other patients so managed. In such cases, it may even be necessary to insert fluid into the pneumonectomy space to prevent further mediastinal shift.

**REFERENCES**

Multiple Aseptic Pulmonary Nodules With Central Necrosis in Association With Pyoderma Gangrenosum*

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Pulmonary manifestations of pyoderma gangrenosum are relatively rare. We report the case of a 45-year-old patient with multiple pulmonary nodules with central necrosis as assessed by CT scan. The patient had a 4-year history of pyoderma gangrenosum with only minor skin manifestations. A CT-guided, fine-needle biopsy of the lung revealed a nonspecific, inflammatory, aseptic necrotic process, which was comparable to the skin biopsy of one pyoderma lesion. Following the initiation of oral prednisolone therapy, a rapid resolution of the pulmonary nodules occurred. We conclude that pulmonary nodules represent a rare pulmonary manifestation of pyoderma gangrenosum.

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Key words: pulmonary nodules; pyoderma gangrenosum

Pyoderma gangrenosum is a chronic ulcerative skin disease of unknown origin. The disease has been reported in association with several systemic diseases (ie, ulcerative colitis, polyarthritis, and paraproteinemia). However, pulmonary involvement in association with pyoderma gangrenosum is a rare finding. We report a case of a patient with pyoderma gangrenosum and multiple aseptic pulmonary nodules containing central necrosis.

CASE REPORT

A 45-year-old Turkish housewife was admitted to the hospital with a 3-week history of cough, chest pain, and weakness. The patient had a 4-year history of pyoderma gangrenosum and had received intermittent prednisolone treatment. The patient had non-insulin–dependent diabetes mellitus for 2 years, was a nonsmoker, and reported no dyspnea or hemoptysis. A clinical examination was unremarkable except for multiple skin scars due to former episodes of pyoderma gangrenosum. On admission, there was only a small acute lesion on the left breast and a pyodermic lesion on the right lateral side of the tongue.

Chest radiography revealed multiple pulmonary nodules in both lungs. A contrast CT scan of the chest demonstrated multiple pulmonary nodules with central necrosis (Fig 1). The results of pulmonary function tests were normal. The results of all biochemical screening tests were within normal limits, except for slight thrombocytosis (436,000/μL¹), a mild elevation of the C-reactive protein level (40 mg/L), and elevated blood sugar level (153 mg/dL).

The results of assays for Ig analysis and rhuematoid factor were within the normal range. The results of tests for both cytoblastic antineutrophil cytoplasmatic autoantibody and perinuclear cytoplasmatic autoantibody were negative. The results of testing for antinuclear antibody were positive with a titer of 1:40, and those for extranuclear and anti-DNA antibodies were negative. The results of serologic screening tests for viruses, Mycoplasma, Legionella, Chlamydia, Aspergillus, and Candida were negative. Repeated sputum cultures for aerobic and anaerobic organisms, fungi, and mycobacterial organisms yielded no growth. The results of tine testing were also negative. Fiberoptic bronchoscopy showed normal structures within the bronchial system.

BAL fluid from the middle lobe showed 23% lymphocytes, 77% macrophages and monocytes, and < 1% granulocytes. A further lymphocyte subpopulation analysis of BAL fluid showed a T4/T8 ratio of 1.7:1. The findings of a microbiological examination of the bronchial washing fluid were negative. There was no evidence for involvement of the upper or lower respiratory tract or for renal disease as a possible manifestation of Wegener’s granulomatosis. Two-dimensional transthoracic echocardiography showed no pathology at all, especially no evidence of valvular vegetations. There was no evidence of septic emboli. To clearly identify the pulmonary nodules, a CT-guided, fine-needle lung biopsy (20-gauge needle) was performed. The biopsy from one nodule in the right middle lobe revealed an inflammatory aseptic and necrotic process (Fig 2). Six days later, the patient underwent a biopsy of the skin lesion of the left breast with histologic findings comparable to an inflammatory aseptic and necrotic process with extensive infiltration of lymphocytes, neutrophilic granulocytes, and plasma cells. Material from the CT-guided biopsy also was examined for microbial growth, but no bacteria were found.

The above findings confirmed the diagnosis of a pulmonary manifestation of pyoderma gangrenosum. Treatment with prednisolone, 100 mg/d orally, was initiated. At 1 week, the patient’s symptoms had improved substantially. The size of the pulmonary nodules had decreased and the lesions became less painful.

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Figure 1. Contrast CT scan on admission showing multiple pulmonary nodules with central necrosis (arrows) in both lungs.