

## APICAL PNEUMATOCELE IN A CHILD

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### SYNOPSIS

**A recurrent soft swelling at the root of the neck with raised intrathoracic pressure is characteristic of cervical herniation of the lung. This is a rare entity. This report acts as a reminder illustrating the clinical and radiological characteristics of the condition.**

### CASE REPORT

An 8-year old Chinese boy presented with a recurring painless mass in the right supraclavicular region for 4 months. The mass was noticed only when the child coughed or strained. There was no respiratory difficulty; his speech and swallowing were not affected. There was no past history of trauma, neck or chest operation, or chronic respiratory disease.

Examination showed the child was well nourished. There was a soft 5x7 cm mass in the right supraclavicular region protruding from below during the act of coughing or straining (Fig.1). It was not painful or tender. This disappeared completely when the child remained quiet with normal respiration. There was no evidence of venous or lymphatic obstruction. The other systems were normal.

Results of routine laboratory tests were within normal limits. Chest x-ray was taken which showed no abnormality. With upper airway tomogram done under cinefluoroscopy, Valsalva failed to show any evidence of a laryngocele. Instead, cervical herniation of the right lung apex was detected protruding upwards through the thoracic inlet to the level of C6 vertebra with displacement of the trachea to the left. The left lung apex did not show any similar herniation (Fig.2).

The child remained active and well for the past 12 months. He was not disturbed by the episodic appearance of the mass. Operation was considered unnecessary and the parents were reassured. The child was discouraged from reproducing the bulge for attention-seeking purposes.

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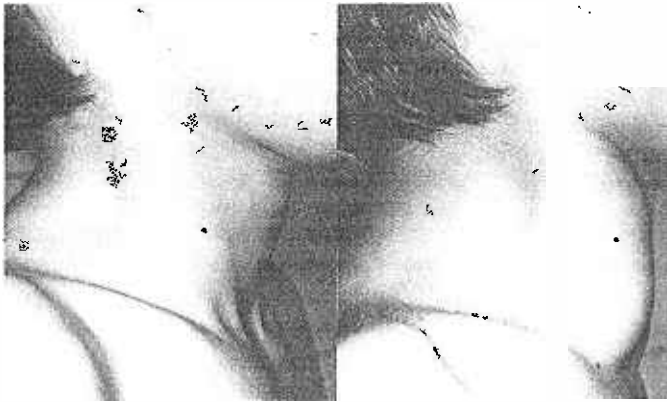


Figure 1 Right side of the neck.  
Left: during quiet respiration.  
Right: bulge appeared with Valsalva manoeuvre.



Figure 2 X-ray appearance of the neck with Valsalva manoeuvre.  
Left: lateral film showing the upward bulge.  
Right: antero-posterior film showing lung herniation and tracheal displacement.

**COMMENT**

The differential diagnosis of a soft mass in the neck includes pharyngeal pouch, laryngocele, venous aneurysm, lung cyst and branchial cyst. The diagnosis of apical pneumatocele or cervical herniation of the lung (1) can be confidently made when there is a supraclavicular upward bulge upon increase of intrathoracic pressure with the Valsalva manoeuvre.

Under normal circumstances, this upward excursion of the lung is prevented by Sibson's fascia, which extends from the transverse processes of the seventh cervical vertebral body to the inner border of the first rib. When this barrier is weakened, herniation occurs. The presentation is commonly unilateral (2) although Fallier reported a case with bilateral presentation (3).

Morel-Lavalee (4) defined hernia of the lung as "a protrusion of the lung through an abnormal aperture in the walls of the thoracic cavity". This classification still applies nowadays, according to the position (cervical, thoracic, diaphragmatic) and the etiology (congenital or acquired). He further divided cervical hernias to traumatic, consecutive, spontaneous and pathologic. Cervical hernias account for about one fourth of the total herniations of the lung (5).

Most earlier reports related cervical hernias to trauma as

the cause (6). Increased intrathoracic pressure must play an important part in its formation: in Fenichel and Epstein's experience (7) with patients aged from 45 to 84, chronic bronchitis and emphysema were common. In the patient reported by Rigden (8) the appearance of the mass was related to coughing. In young children, the weakness of the Sibson's fascia is likely to be congenital in origin.

Thompson (9) reviewed the literature of lung hernias in 1975 and found a total of 68 reports, the majority of which were adults, and only 9 cervical hernias were found in children in the last 25 years. Three other reports (5, 10, 11) have since appeared in the English literature. The high association rate of cervical hernias with biliary atresia is interesting: Katayama et al (11) reviewed the chest roentgenograms of 37 infants and found 45 cervical hernias of the lung in 26 cases. They postulated this to the increased intrathoracic pressure secondary to abdominal distension, weakness of Sibson's fascia and decreased muscular tone: the last two possibly be in part due to vitamin E deficiency leading to muscular degeneration. This large series of cervical herniation in infants, never previously been reported elsewhere, may point out that subclinical and asymptomatic hernias are in fact not that rare. Its relationship with biliary atresia needs further confirmation from other authors.

In addition to a swelling which aesthetically may look odd, cervical hernia may present with other problems. Accidental trauma around the lower neck carries a higher risk of pneumothorax. Lung hernia may present difficulty when tracheostomy is performed. Seigelman et al (12) reported a 32 year old asthmatic woman with transient right subclavian venous obstruction associated with cervical hernia. However, incarceration has never been encountered previously.

Surgery may be considered necessary although this should only be reserved for those cases with severe cosmetic problem. After all, Fallier (3) has reported spontaneous regression of a cervical hernia in a child treated expectantly for three and a half years, though this has not been reported elsewhere.

**REFERENCES**

1. Reinhart H A, Hermel M B: Herniation of the lung in the cervical region. *Radiology* 1951; 57: 204-7.
2. Van Wezel N: Cervical hernia of the lung. *J Amer Med Assoc.* 1950; 142: 804-5.
3. Fallier C J: Cervical hernia of the lung. *J Pediatr* 1955; 46: 332-6.
4. Morel-Lavalee: Hernies du poumon. *Bull Soc. Chirurgie Paris* 1882; 1: 75-195.
5. Devgan B K, Brodeur A E: Apical pneumatocele. *Arch Otolaryngol* 1976; 102: 121-3.
6. Montgomery J G, Lutz H: Hernia of the lung. *Ann. Surg.* 1925; 82: 220-231.
7. Fenichel N M, Epstein B S: Pulmonary apical herniations. *Arch Int Med* 1955; 96: 747-51.
8. Rigden B G: Cervical lung hernia. Report of a case. *Lancet* 1955; 2: 803-4.
9. Thompson J S: Cervical herniation of the lung. Report of a case and review of the literature. *Pediatr Radiol* 1976; 4: 190-2.
10. Newland M C, Chapsin J W, Wingard D W: A cervical mass associated with positive pressure on the airway. *Anaesthesiology* 1976; 44: 341-3.
11. Katayama H, Suruga K, Kimoto T, Kurashige T: Cervical hernias of the lung in congenital biliary atresia. *Nippon Acta Radiol* 1975; 35: 729-32.
12. Seigelman S J, Shanser J D, Attai L A: Cervical herniation of the lung associated with transient venous occlusion. *Dis Chest* 1968; 53: 785-7.