

Case report:

**Unilateral vocal cord palsy as the presentation of metastatic mediastinal adenocarcinoma**

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**Abstract**

**Introduction:** Unilateral vocal cord palsy is more common than the bilateral cases. The left side is more affected than the right side owing the longer course of the Left recurrent laryngeal nerve. Iatrogenic causes for example thyroidectomy or cardiac surgery predominate the etiology of its incidence. **Methods:** A review of medical case record. **Results:** A 68-year-old man presented with voice change for one month duration. It was associated with occasional shortness of breath. Examination showed unilateral Left vocal cord palsy. Further investigation revealed a huge anterior mediastinal mass. A CT-guided biopsy was performed and histopathologically confirmed as adenocarcinoma. **Conclusion:** Any lesion in the course of recurrent laryngeal nerve can lead to vocal cord palsy and change of voice. A metastatic lesion to mediastinal nodes even though very rare can be one of them. Mediastinal lymphoma is one of its differential diagnoses.

**Keywords:** vocal cord; palsy; mediastinum; mass; compression

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**Introduction**

Unilateral vocal cord palsy can be attributed to many factors. Besides neck trauma and iatrogenic damage to the intact nerve during surgery to the thyroid or mediastinum, the presence of any lesion along the course of the recurrent laryngeal nerve can results in direct compression or invasion to the neural integrity<sup>1</sup>. The left side is more common to be affected owing to its longer course. The left vagus nerve travels down to the level of aortic arch before it return to the larynx in the tracheo-esophageal groove. On the right side, the vagus nerve gives off its recurrent laryngeal branch after it hooks around the subclavian artery. However both sides can be affected by the presence of mediastinal pathology.

**Case summary**

A 68-year-old Malay male with underlying diabetes mellitus, hypertension and chronic renal disease complained of voice change for one month prior to presentation. He also experienced occasional shortness of breath. There was an underlying problem of unresolved diffuse submandibular swelling for 2 months duration. He was an active smoker of 1 pack per day. Examination showed an elderly man

with hoarseness but no stridor. No neck mass was palpable. The submandibular mass was soft with no definite margin appreciated. Laryngoscopy showed uncompensated unilateral Left vocal cord palsy. Computed tomography scan was obtained in order to further investigate the neck and thoracic cause of vocal cord paralysis. CT scan showed a well-defined, lobulated homogeneously enhancing soft tissue mass occupying the anterior mediastinum (Figure 1A). The mass appeared insinuating between the branches of the arch of aorta. However, the vessels were well opacified. No calcification or necrotic area within. Matted level IV right cervical nodes noted with the largest measuring 1.5cm x 1.9cm (Figure 1B). Subcentimeter lymph nodes were also noted at the other cervical levels and supraclavicular region. Hypodense filling defects were noted within both external jugular veins in keeping with thrombosis with presence of multiple collateral vessels at left anterior and posterior upper chest. Multiple enhancing subcentimeter lymph nodes were also noted at the coeliac, paraaortic, aortocaval, mesenteric and inguinal regions. Based on these findings a diagnosis of lymphoma was given.

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A CT-guided through-cut biopsy was performed to obtain the tissue diagnosis. The histopathological examination of the mediastinal mass turned out to be a metastatic adenocarcinoma evidenced by positive by immunohistological stains for CKAE 1, CKAE 3, CKAE 7 and TTF 1 besides special Mucin stain positive (Figure 2 & 3). He was planned for further workup for investigation of the primary tumour. However the patient succumbed to his illness. The cause of death was septicemic shock secondary to hospital acquired pneumonia.

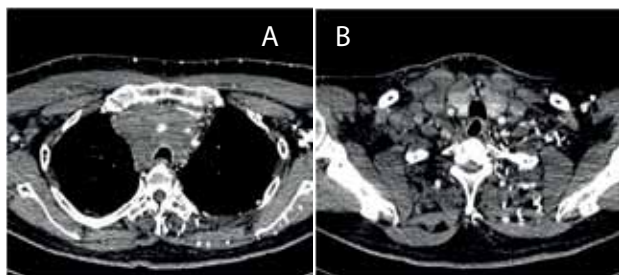


Figure 1: Anterior mediastinal mass with patent branches of aorta (A) and right cervical lymphadenopathy (B)

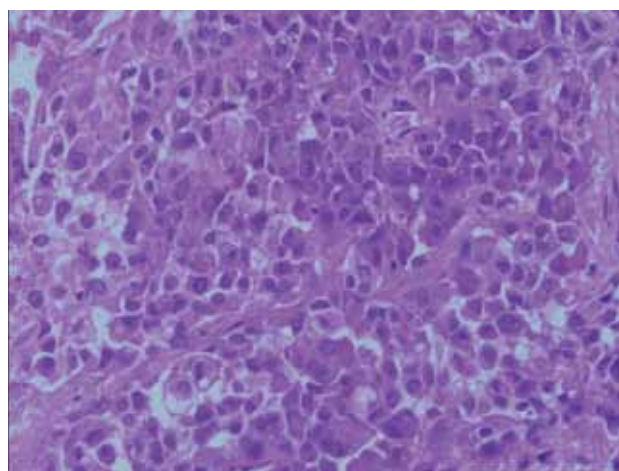


Figure 2: Tumour cells (H&E x 400)

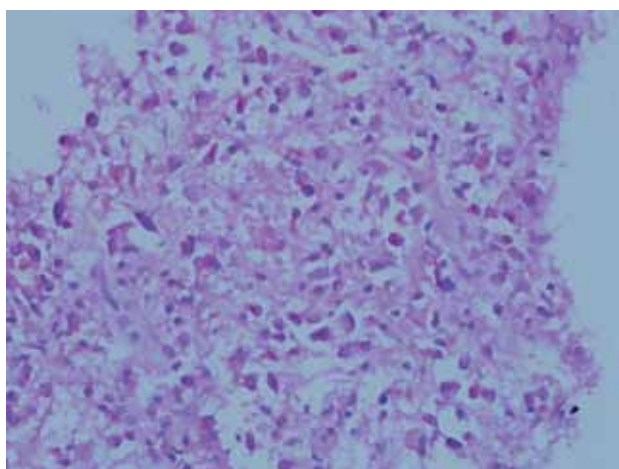


Figure 3: Special stain Mucin positive

## Discussion

Vocal cord palsy induced by mediastinal lesion or surgery tends to lead to larger glottis gap as compared to injury from thyroidectomy<sup>1</sup>. It is seen in this case whereby the left vocal cord palsy was not compensated by the normally functioning right side. If a paralyzed vocal cord is located near the median or paramedian condition, the compensation may take place easier leaving no or minimal glottis gap.

Presence of neck mass along the course of the recurrent laryngeal nerve can cause compression to the nerve giving symptom of hoarseness. Commonly the enlarged thyroid gland or even a lesion within the gland itself can cause impingement onto the nerve. Solitary nodule in the gland can present with unilateral vocal cord palsy, even sometimes in a clinically normal neck on palpation<sup>2,3</sup>. On rare occasion medications such as chemotherapy agent for example vinca-based alkaloid can cause neuropathy involving recurrent laryngeal nerve leading to vocal cord palsy and hoarseness<sup>4</sup>.

The course of the nerve that travels down to the mediastinum has made the lesion in the chest also subjecting the vocal cord function at risk. In a review of 42 patients with vocal cord palsy contributed by chest lesion in Kyoto Japan, 15 cases were lung cancer, 9 cases from thoracic aorta aneurysm, followed by 6 cases from metastatic mediastinal tumour. Only one case was from primary mediastinal tumour and mediastinal lymphoma respectively<sup>5</sup>.

Primary adenocarcinoma of mediastinum is very rare although it has been sporadically reported for example a originating from a calcified nodule or mature teratoma<sup>6,7</sup>. More commonly, the lesion is a secondary metastasis from lung, gastrointestinal tract, pancreas, kidney or even the pituitary gland<sup>3</sup>.

It is difficult to differentiate mediastinal adenocarcinoma from lymphoma based on CT findings alone as both of these conditions could present similar with anterior mediastinal mass with cervical lymphadenopathies<sup>8-10</sup>. This condition is seen in the indexed case. In top of that, both of this condition could also cause superior vena cava obstruction due to local mass effect. However, a study in France noted that mediastinal calcifications are not present in mediastinal adenocarcinoma while it has been reported in lymphoma. However, these findings are not specific and needs histopathological correlations to come to proper diagnosis<sup>10</sup>.

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