Glomus tumors of the lung are rare benign neoplasm, originating from modified smooth muscle cells. The patients are usually presented with no or non-specific symptoms such as cough, dyspnea or hemoptysis. Although surgical treatment is considered as the treatment of choice, the endobronchial therapy can be applied to the patients who are unfit for surgical excision. Herein, we describe two rare cases of glomus tumor originated at large airway (trachea and main bronchus) without respiratory symptoms and review their characteristic radiologic, macroscopic and pathological features.

**Keywords:** Glomus Tumor; Lung; Trachea

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**Case Reports**

1. **Case 1**

A 64-year old man, who had no clinical respiratory symptom and previous medical problem except hypertension, visited our hospital due to incidentally found tracheal mass on the examination of health care program using computed tomography (CT). CT revealed a highly enhanced 2.6 cm-sized, iceberg shaped mid-tracheal tumor involving the right-side posterolateral wall, suggesting the impression of tracheal paraganglioma (most likely), sclerosing hemangioma and leiomyoma (Figure 1A). On the bronchoscopic examination, a 1 cm-sized, vascular mass was noted 7 cm below the vocal cord (Figure 1B). However, pulmonary function test (PFT) showed no abnormal findings: forced vital capacity (FVC), 3.6 L; forced expiratory volume in 1 second (FEV1), 3.13 L; and FEV1/FVC, 87%. Tracheal resection and anastomosis was done. He is well without evidence of local recurrence or com-
Two cases of glomus tumor

2. Case 2

A 52-year-old women, who had no specific medical history except appendectomy and Cesarean section, was transferred due to incidentally found tracheobronchial nodule on the chest CT of health care program. Radiologically, a 1.6 cm-sized, highly enhanced nodule was found in right main bronchus near the carina suspicious of carcinoid, leiomyoma or other submucosal tumor, such as adenoid cystic carcinoma (Figure 2A). Although her PFT showed moderate obstructive pattern (FVC, 3.21 L; FEV1, 1.70 L; FEV1/FVC, 53%) and normal carbon monoxide diffusing capacity (DLco), she complained no associated respiratory symptom. Bronchoscopy revealed a sessile endobronchial mass with hyperemic appearance in carina to right main, suggesting of carcinoid tumor and squamous cell carcinoma (less likely) (Figure 2B). Resection of carina and both main bronchus with neocarina formation was done. She was well without local recurrence on 3 month of follow-up, although a bronchoscopic en bloc resection was done due to granulation tissue at the anastomosis site 2 months after operation.

3. Pathologic findings

1) Case 1: Macrosocopically, the mass was located at posterior membranous portion of trachea and showed erythema-
toous mucosal surface (Figure 1C). On section, it discloses a pink, round, intraluminally protruding, well-demarcated mass showing meaty cut surface without necrosis or hemorrhage (Figure 1D). After the fixation by formalin, the mass showed similar consistency and appearance with leiomyoma of bronchus or the other organs (Figure 1E). Microscopically, it consisted of proliferation of epithelioid cells with abundant vascular channels (Figure 1F, G). The tumor cells had abundant eosinophilic or clear cytoplasm and bland oval nuclei (Figure 1H). These cells showed perivascular arrangements. No nuclear atypia, mitoses or necrosis were noted. These histologic findings were compatible with those of carcinoid tumor, hemangioendothelioma and GT. Immunohistochemically, the tumor cells showed positive finding for smooth muscle actin (1:1,000, mouse monoclonal, Dako, Glostrup, Denmark), confirming GT (Figure 1H, inset).

2) Case 2: A mass was located at left main bronchus involving carina with intraluminally protruding appearance and erythematous mucosal surface. On section, it disclosed a pink, round, well demarcated mass showing flesh cut surface without necrosis or hemorrhage (Figure 2C). After the fixation by formalin, the mass showed gray solid cut surface with rubbery consistency (Figure 2D). Microscopically, the mass was well circumscribed and consisted of relatively uniform epithelioid cells with bland looking hyperchromatic nuclei (Figure 2E, F). The formation of vascular channels was less than case 1. For differential diagnosis with carcinoid, immunohistochemical stains with smooth muscle actin (1:1,000, mouse monoclonal, Dako), chromogranin (1:400, DAKA3, Dako) and CD56 (1:50, 1B6, Novocastra, Newcastle upon Tyne, UK) were done, and the tumor cells showed positivity for only smooth muscle actin (Figure 2F, inset).

Discussion

GT arising in large airway is very rare neoplasm consisting of several variant; solid GT (most common), glomangioma,
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