Bronchoscopic Management of Tracheal Obstruction due to Thyroid Cancer: A Case Series

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INTRODUCTION

Papillary thyroid carcinoma (PTC) is a malignant tumor that associated with favorable survival. Extrathyroidal extension will increase the mortality. The incidence of tracheal invasion secondary to thyroid carcinoma is rare (35-60%), but it does, central airway obstruction (CAO) can lead to death. We report two cases of patient with CAO due to PTC.

CASE 1

A 50 years old man with progressive dyspnea, stridor, and hoarseness.

Admission
- Chest CT scan
  A solid mass in the right neck and superior mediastinum that narrowed the trachea (Figure 1a)
- Bronchoscopy
  - A mass above the vocal cords, the infiltrative protruded mass that completely covers the proximal trachea, and the mid-trachea (Figure 2). The mass removed by laser, cryoablation, and argon-plasma coagulation through a rigid bronchoscope. The tracheal lumen was open >50% after procedure.
  - Histopathological examination: papillary thyroid carcinoma.

One month after admission
- Thyroidectomy was performed and followed by emergency bronchoscopy two days after because he complained of severe dyspnea and stridor.
- Emergency bronchoscopy
  An infiltrative compression mass from the carina to 10 cm above the carina. The infiltrative mass was removed by laser and cryoablation. Y stent was insertion through a rigid bronchoscope (Figure 3).
- Chest CT scan
  A solid mass in the right neck and superior mediastinum is no longer constricting the trachea (Figure 1b).

Two months after admission
- Bronchoscopy evaluation
  A silicone stent from below the vocal cords to the proximal right main bronchus and mid-left main bronchus, there was granulation tissue under the vocal cords, proximal right main bronchus, and mid-left main bronchus (Figure 4).

Five months after admission
- Radioactive iodine therapy was performed

Eights months after admission
- Bronchoscopy evaluation
  Compression stenosis of the vocal cord and infiltrative granulation mass partially covering the distal stent. Triamcinolone was injected into the granulation mass, followed by Y stent removal and tracheostomy.
- Chest CT scan
  A solid mass in the right neck and superior mediastinum is no longer constricting the trachea, the size is slightly increased. (Figure 1c).
- Patient was planned for radiotherapy.

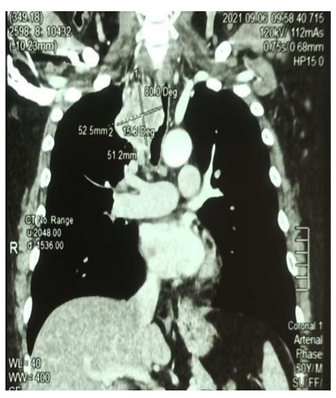

Figure 1a. Chest CT scan on admission

Figure 1b. Chest CT scan after Y stent insertion

Figure 1c. Chest CT scan eight months after admission

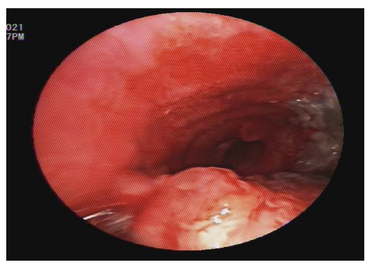

Figure 2. Bronchoscopy on admission: infiltrative and compression stenosis

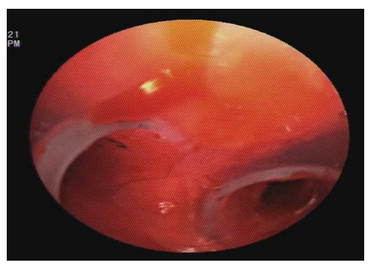

Figure 3. Inserted Y stent on emergency bronchoscopy

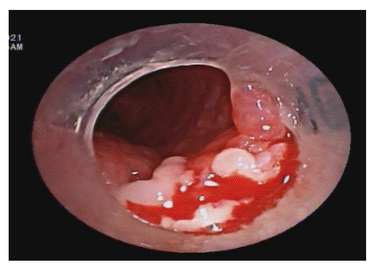

Figure 4. Bronchoscopy evaluation two months after admission: granulation at distal stent

CASE 2

A 46 years old man with progressive dyspnea, stridor, hoarseness, and hemoptysis.

Admission
- Neck CT scan
  A left thyroid tumor that expanded intrathoracic, infiltrating the trachea and suppressing the trachea to the right (Figure 5).
- We did an emergency tracheostomy, followed by bronchoscopy using a fiber optic bronchoscope.
- Bronchoscopy
  - An infiltrative subglottic mass that almost completely closed (Figure 6).
  - Histopathological examination: papillary thyroid carcinoma (Figure 7).
  - As a guide to determine the position of the tracheostomy cannula.
  - Re-planned to debulk recanalization of the mass above the tracheostomy when decannulation of the tracheostomy was performed.

One month after admission
- Thyroidectomy was performed.

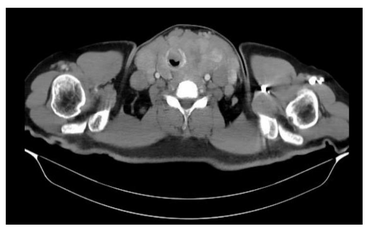

Figure 5. Neck CT scan on admission

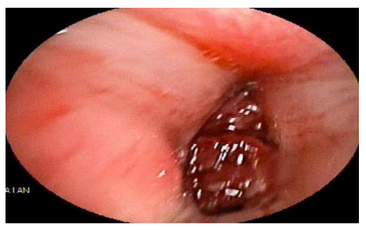

Figure 6. Bronchoscopy finding on admission

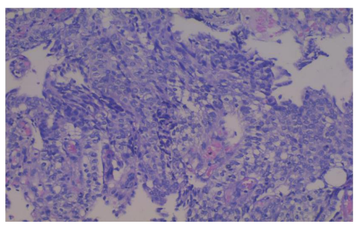

Figure 7. Histopatological examination

DISCUSSION

Central airway obstruction can lead to death in PTC. Surgery is the treatment of choice to maintain airway patency. However, it's usually can't be performed if the invasion extends to the intrathoracic, as well as a tracheostomy. Bronchoscopy is treatment of choice for primary airway obstruction secondary to malignancies. Rigid bronchoscope is an ideal instrument for maintaining airway patency. A fiber optic bronchoscope can be use too by inserted through a rigid bronchoscope. In obstruction or fistula near the carina, placement of a Y Stent is the most appropriate and convenient option to use. Bronchoscopy is also commonly performed to determine the extent of tracheal invasion. In addition, repeated bronchoscopy is required to evaluate the airway.

CONCLUSION

Bronchoscopy is effective treatment option in CAO due to tracheal invasion secondary to PTC. Rigid bronchoscopy, laser, cryoablation, and airway stent are modalities in bronchoscopy that can be performed based on patient performance status and type of obstruction. Bronchoscopy is also effective as diagnostic tool and evaluation for this cases.

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