Tracheobronchopathia osteochondroplastica: a cause of difficult intubation

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Background

Tracheobronchopathia osteochondroplastica (TPO) is a rare benign process of the tracheobronchial tree, characterized by multiple bone or cartilage sub mucous nodules which protrude into tracheobronchial lumen. Since TPO is a benign process with no specific symptoms, most cases in past was discovered incidentally during the autopsy, but today is more often diagnosed during bronchoscopy. The disease is rarely diagnosed during difficult intubations. Symptoms may include shortness of breath, coughing, hemoptysis, hoarseness and wheezing. Etiology of TPO is unknown - theories range from elastic tissue neoplasia to chemical or mechanical irritation inciting cartilaginous and osseous metaplasia. The disease is usually seen in patients in the fifties. TPO prevalence found during routine bronchoscopy ranges from 0.02% to 0.7%. Many experienced endoscopists believe that the disease is more common, but are not identified due to the asymptomatic nature of this disease. The definitive diagnosis can be set by bronchoscopy, computerized tomography or magnetic resonance imaging. Biopsy and histopathological diagnosis is desirable, but not necessary for the diagnosis. There is no specific therapy for this entity. Treatment options vary from conservative treatment, laser resection and radiation therapy, and surgical interventions with stent implantation. Treatment must be aligned with the needs of patients.

Key References:

Case report

Patient is 58-year-old female, admitted for a planned surgical treatment of nasal septum deviation and chronic inflammation of both maxillary sinuses. Past medical history included “depressive syndrome” for which is administered psychiatric therapy Sertraline. She had no family history of pulmonary disease. She has no known drug allergies. She is non-smoker and not alcohol or drug consumer. Physical examination revealed a healthy female with no contraindication for procedure in general anesthesia.

Anesthesia is induced with Propofol 200mg and Fentanyl 100mg, myorelaxation is achieved with Vecuroniumom 8mg. During intubation a glottic aperture is visualized but subglottic resistance occurred during insertion of tube size 9mm in diameter. There was an attempt to insert smaller tubes, even up to 5mm, but it was unsuccessful due subglottic resistance. Surgery is delayed for further diagnostics.

The patient was referred to the respiratory physicians. Bronchoscopy showed many nodular lesions of various sizes that protrude into the lumen of the entire length of the trachea and stretch all the way to tracheal bifurcation and main bronchi. A photograph taken of the subglottic region of the trachea (Fig. 1 and Fig 2.) shows the extent of the lesions. CT scan of neck and thoracic organs shows the right-shifted trachea and reduced lumen in entire length of trachea, extent of 7 to 10 mm in latero-lateral diameter. The wall of the entire length of trachea is the rough, thickened with multiple calcification. Tracheal bifurcation and both principal bronchi has also thickened wall with small calcification. (Fig. 3).

Discussion

Tracheobronchopathia osteochondroplastica is a clinical entity characterized with more cartilage or bone submucous nodes that protrude into the lumen of the trachea and bronchi, and may or may not have to cause respiratory symptoms. Submucous nodules contain elements of elastic cartilage in various stages of development, which can be correlated with calcified cartilage or bone tissue.

Etiology of TPO is unknown - theories range from elastic tissue neoplasia to chemical or mechanical irritation inciting cartilaginous and osseous metaplasia. The nodes are most often present in the lower two-thirds of the trachea and proximal parts of the main bronchi, focal or diffuse. In our case submucous nodules are present diffusely throughout the length of the trachea and main bronchi.

The disease is usually manifested as chronic cough and dyspnea, which often leads to misdiagnosis of asthma or chronic bronchitis. Many patients are asymptomatic. The larger nodes that protrude into the lumen of the respiratory tract may cause symptoms of chronic cough, hoarseness, dyspnea, hemoptysis and recurrent respiratory tract infections. In rare cases, the disease can progress to tracheal stenosis with critical obstruction of the airways. Most cases remain undiagnosed, with only 5% of people are diagnosed before death. In our case it was a 57 year-old woman who had no symptoms of the disease. Prognosis of disease is generally good. Treatment of TPO is symptomatic, because usually it is not possible to remove all the nodes or to prevent their recurrence.

In recent literature we have found only four cases of TPO that causes unexpectedly difficult intubation due subglottic obstruction. In three of them, as in our case, it was a process of extensive disease which had significant problems during intubation. In our case intubation failed even with the tube of size 5 mm, and surgical treatment had to be aborted.

Conclusion

When intubation is impossible always consider Tracheobronchopathia osteochondroplastica, although it is rare entity, in further diagnostic evaluation. In extensive disease process and the impossibility of tracheal intubation, induction of anesthesia using the laryngeal mask is offered as an optimum solution with this disease.