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Plastic Bronchitis: A Respiratory Distress Issue in Adults and Children

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Commentary

Plastic bronchitis is a rare and likely underdiagnosed condition characterised by the removal of solid, cohesive, branching casts by expectoration or bronchoscopic removal. It is not to be confused with the purulent mucus clogging of the airway found in cystic fibrosis or bronchiectasis patients. Few drugs have been proven to be effective, and others are now known to be dangerous. Understanding the genetics of lymphatic growth and mal-development, determining how aberrant lymphatic malformations contribute to cast formation, and creating innovative treatments are all current research objectives in plastic bronchitis research. It's marked by the production of massive, branching bronchial casts that are frequently expectorated but only detectable through bronchoscopy. Bronchial casts are usually the result of underlying lung, heart, or lymph vascular disorders. A case of plastic bronchitis with bilateral chylothorax is described.

Bronchoscopic removal of casts and inhalation of 20,000 units of heparin twice a day could be used to treat progressive respiratory insufficiency. When treating the underlying diseases fails and the casts are mostly made of fibrin, heparin inhalation might be tried. Histological examination of the castings may be helpful in making therapy decisions and may also reveal an underlying disease. Plastic bronchitis is usually connected with a pulmonary condition and improves on its own or with medical treatment. A case of plastic bronchitis with no known cause is presented. The symptoms of the patients were unresponsive to medical treatment; however they were resolved following a right middle lobectomy. Recurrent expectoration of massive, branching bronchial casts is a symptom of plastic bronchitis, which is a rare and underdiagnosed condition. Idiopathic plastic bronchitis was diagnosed after a thorough examination revealed no identifiable aetiology. Bronchial casts in plastic bronchitis can range in size from small segmental casts of a bronchus to casts that fill the entire lung's airways. If mechanical obstruction of major airways occurs, plastic bronchitis can appear as an immediate life-threatening emergency.

Type I, inflammatory casts, and type II, acellular casts are the two types of casts. Type I inflammatory casts are frequently related with bronchial illness and manifest acutely. Cast formation by acellular cells is frequently chronic or recurrent. Plastic bronchitis is linked to a variety of systemic disorders, but in many cases, such as in our patient, there is no underlying reason. Plastic bronchitis is treated with acute therapy to help with cast removal and expectoration, as well as particular short- or long-term treatments aimed at addressing the underlying hyper-secretory mechanism. The therapeutic alternatives are only backed by anecdotal evidence based on case reports, due to the rarity and heterogeneity of plastic bronchitis, which makes systematic research into its treatment difficult. A better understanding of how mucus production is regulated could lead to new therapeutic options for plastic bronchitis and other chronic lung disorders defined by mucus hypersecretion.

Pediatric cardiothoracic surgeries, such as Fontan procedures, infections, inflammatory processes, acute chest syndrome, and iatrogenic events can all cause PB in children. PB can be idiopathic or caused by infections, anatomic changes in lymphatic channels, surgeries, drugs, or other comorbidities in the adult population. The pathogenesis of PB is unknown; however, links to inflammatory disorders and cardiac surgery have been suggested. In plastic bronchitis, there are two types of cast formations: Type I casts are linked to inflammatory disorders, while Type II casts are linked to surgical operations. Because the knowledge on PB is currently limited, future research is required to gain a better understanding of the condition. Plastic bronchitis and its treatment choices require primary care clinicians and respiratory specialists to be aware of its many manifestations and illness connections.

Plastic bronchitis is an uncommon condition in which lymphatic bronchial casts form in the tracheobronchial tree, obstructing the airway. Expectoration of bronchial casts is the most prominent characteristic. This condition commonly happens after a Fontan operation for congenital cardiac disease in the postoperative phase. Mucolytics and chest physiotherapy are used to treat the condition, as well as bronchoscopy to remove the casts and aerosolized urokinase or r-TPA in the most severe cases. At the age of seven, a 12-year-old kid with pulmonary atresia, an intact ventricular septum, and a severely hypoplastic right ventricle underwent a modified Fontan procedure. The patient began to have regular episodes of coughing, dyspnea, and desaturation at the age of 12 years, followed by problematic emission of white bronchial casts. To improve hemodynamics and symptoms, an extracardiac Fontan conversion was performed. Following surgery, recurrent episodes of airway blockage necessitated bronchoscopy, which was eventually resolved with the injection of aerosolized urokinase.

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