**Nkan Idiongo E., Pytetska N.**

**BRONCHIAL THERMOPLASTY – THE MODERN METHOD OF TREATMENT OF BRONCHIAL ASTHMA**

**Kharkov National Medical University**

Bronchial thermoplasty (BT) is a novel intervention for asthma in which controlled thermal energy from a radiofrequency (RF) source is delivered to the airway wall during a series of bronchoscopy procedures as a means of reducing excess airway smooth muscle mass. This both decreases narrowing of the airway lumen due to airway remodeling and reduces the potential for dynamic smooth muscle–mediated bronchoconstriction. Bronchial thermoplasty is indicated for the treatment of severe, persistent asthma in patients aged 18 years and older whose asthma is not well controlled by inhaled corticosteroids and long-acting β2 -agonists (LABA).

The alair bronchial thermoplasty system consists of a RF control unit and a flexible single-use catheter with an expandable electrode array at one end. The system is designed to be used in conjunction with RF– or high frequency–compatible flexible fiberoptic bronchoscopes with a 4.9- to 5.2-mm outer diameter and a 2-mm minimum working channel. The catheter is advanced under bronchoscopic visualization and, in a manner similar to conventional RF ablation, RF energy is applied systematically to airways between 3 mm and 10 mm in diameter throughout the tracheobronchial tree. The control unit monitors the system to ensure that the electrode array is in proper contact with the airway wall and controls the degree of tissue heating through continuous feedback.

Patients undergoing bronchial thermoplastic are typically treated in 3 outpatient sessions approximately 3 weeks apart, with different areas of the lungs targeted in each session. The procedure is performed under moderate sedation or light anesthesia. Treatment is divided to minimize the risk of exacerbating asthma or inducing diffuse airway edema and to avoid prolonged procedural length. In addition, to minimize post procedure airway inflammation, patients are given prophylactic steroid coverage, typically prednisone 50 mg daily for 5 days beginning 2 days prior to bronchoscopy.

Careful planning of the order in which the airway segments are to be accessed and treated is necessary to ensure successful coverage of all areas to be addressed. Before proceeding with treatment in the second and third sessions, previously treated areas should be inspected for possible mucus impaction or scarring and to ensure adequate healing.

As with other bronchoscopic procedures, patients should stop taking anticoagulants, antiplatelet agents, aspirin, and nonsteroidal anti-inflammatory drugs (NSAIDS) before the procedure, in accordance with physician guidance.

Contraindications to bronchial thermoplasty include the following:

* Pacemaker, defibrillator, or other implantable electronic devices
* Known sensitivity to medications required to perform bronchoscopy, including lidocaine, atropine, fentanyl, and benzodiazepines
* Unstable comorbid conditions that would present a risk for bronchoscopy, such as untreated obstructive sleep apnea or clinically significant cardiovascular disease, epilepsy, insulin-dependent diabetes, or cancer
* Previous bronchial thermoplasty treatment (these patients should not be retreated in the same area(s), as no clinical data are available on the safety or efficacy of repeat treatment.)

Bronchial thermoplasty should be postponed if any of the following conditions are present:

 – active respiratory infection;

 – severe asthma attack or changing dose of systemic corticosteroids for asthma (up or down) in the past 14 days;

* known coagulopathy.

Common adverse events from bronchial thermoplastic are typical of airway irritation and include aggravation of asthma symptoms (wheezing, chest discomfort, cough, chest pain), dyspnea, productive cough, discolored sputum, and upper respiratory tract infections.