A 52-year-old woman was admitted to the hospital with progressive shortness of breath of 2 days' duration. Bronchial asthma had been diagnosed 6 months earlier; inhaled corticosteroids, bronchodilators, and leukotriene antagonists were prescribed. Despite aggressive treatment, the patient's dyspnea and wheezing worsened.

The patient denied allergy, fever, chills, rigors, hemoptysis, and chest pain. She did not smoke cigarettes or use alcohol. Three years earlier, she had undergone surgery for colon cancer; the patient has had no recurrences, and there are no known metastases.

The patient was in obvious distress; respiration rate was 26 breaths per minute with the use of accessory muscles. She was afebrile; pulse rate was 88 beats per minute; blood pressure, 120/80 mm Hg. No clubbing or cyanosis was noted. Heart sounds were normal and without murmurs. Bilateral wheezing, which was more prominent on the right side, was heard on auscultation. The abdominal and neurologic examination findings were unremarkable.

White blood cell count was 11,200/μL with 72% neutrophils, 21% lymphocytes, and 7% monocytes. Hemoglobin level was 12.7 g/dL; hematocrit, 32%. The blood gases on room air were pH, 7.44; PCO\(_2\), 30 mm Hg; and PO\(_2\), 72 mm Hg. Forced vital capacity (FVC), 96% of predicted; forced expiratory volume in 1 second (FEV\(_1\)), 72% of predicted; and FEV\(_1\):FVC ratio, 65. There was no significant bronchodilator response. The carbon monoxide-diffusing capacity was 72% of predicted. A chest film revealed hyperinflation on the right side (Figure 1); infiltrate, effusions, and lymphadenopathy were absent. Because of the unilateral wheezing and the failure of conventional antiasthma medication, a bronchoscopy was performed. The procedure demonstrated a normal trachea and normal left main bronchus; however, an endobronchial polypoidal lesion was found on the right main stem bronchus (Figure 2). A brush biopsy of the lesion revealed a poorly differentiated adenocarcinoma that was most likely a metastatic lesion arising from the prior colon cancer. Following resection of the tumor, the patient's wheezing and dyspnea markedly improved.

DIFFERENTIAL DIAGNOSIS

Keep in mind that "all that wheezes is not asthma."\(^1\) As in this patient, endobronchial lesions that cause airway obstruction may be misdiagnosed as asthma. This case offers clues and strategies to help you differentiate between asthma and other causes of wheezing.

Asthma. The differential diagnosis of asthma is one of the most difficult problems in clinical medicine. Although traditionally asthma conjures images of paroxysms of wheezing, shortness of breath, and cough, the disease's presentation can be deceptive. Asthma may present as uncontrolled cough or dyspnea alone; most patients have wheezing as well. Wheezing is usually absent when the asthmatic process is in remission. It is occasionally absent in severe attacks, presumably because the patient is not able to generate sufficient airflow velocity to produce wheeze. Conversely, wheezing may be a prominent manifestation of numerous nonasthmatic conditions of the lung (Table 1). These pseudoasthmatic syndromes respond poorly to standard antiasthma therapy; however, specific therapy directed at the underlying disease is often highly effective.

---

1. Kanwar Rauhila, MD; Rammohan Gumpeni, MD; Sonia Arunabh, MD.
Wheezing in a 52-Year-Old Woman With a History of Colon Cancer

Published on Psychiatric Times
(http://www.psychiatrictimes.com)

Other causes of wheezing.

Bronchial asthma
Nonasthmatic diseases
AIDS
Angioedema
Bronchiolitis
Carcinoid syndrome
Central airway obstruction
Chronic obstructive pulmonary disease
Cocaine toxicity
Congestive heart failure ("cardiac asthma")
Endobronchial tuberculosis
Environmental and industrial toxins (eg, smoke inhalation)
Factitious asthma
Gastroesophageal reflux
Laryngitis and laryngeal dysfunction
Microvascular angina
Psychosomatic illness
Pulmonary embolism
Sarcoidosis
Pulmonary infiltration with eosinophilia
Allergic bronchopulmonary aspergillosis
Chronic eosinophilic pneumonia
Churg-Strauss syndrome
Löffler syndrome
Tropical pulmonary eosinophilia
Wheezing and shortness of breath indirectly indicate airflow obstruction. The patency of the airways and the maintenance of laminar flow depend on a variety of related forces, including the tone of the bronchial musculature, the integrity of the supporting cartilage, and the amount and character of secretions. A derangement of any of these factors may result in wheezing. For example, in patients with congestive heart failure, edema of the mucous membrane can greatly narrow the caliber of the airway, causing so-called cardiac asthma, or left ventricular failure manifested by wheezing and dyspnea. Similarly, pulmonary embolic disease may induce the release of bronchoactive amines that affect the tone of the tracheobronchial tree and occasionally produce diffuse polyphonic wheezing. Cocaine toxicity also may present with wheezing that is caused by cocaine-induced bronchial muscle contraction.

**Pulmonary infiltration with eosinophilia.** All pulmonary infiltration with eosinophilia (PIE) syndromes feature pulmonary infiltration and peripheral blood eosinophilia. Asthma-like symptoms, particularly wheezing, may be prominent in the following PIE disorders:

- **Löffler syndrome,** a self-limited disease that features transient pulmonary infiltrates and eosinophilia associated with helminthic infection.
- **Chronic eosinophilic pneumonia,** which is characterized by severe respiratory distress that includes wheezing, fever, night sweats, weight loss, and eosinophilia. Dense infiltrates in a peripheral distribution are usually noted on chest films.
- **Tropical pulmonary eosinophilia** presents with cough, dyspnea, and wheezing and may occur in patients with filarial infection.
- **Allergic bronchopulmonary aspergillosis** is a complicated or a special form of asthma in which the immunologic reactions to *Aspergillus* species play an important role.
- **Churg-Strauss syndrome** predominately involves the lungs and manifests with eosinophilia, granulomatous reactions, and usually severe asthma.

**Vocal cord dysfunction.** This syndrome is characterized by episodes of wheezing that are precipitated by stress or infection. The wheezing usually is produced by vocal cord adduction during inspiration. Often seen in young women, this condition can be diagnosed by laryngoscopy.

**Cancer of the lung.** Pulmonary malignancy has many and varied presentations; wheezing is a presenting complaint in up to 2% of patients. Wheezing occurs more frequently with hilar tumors, which cause narrowing of large bronchi; with polypoid endobronchial lesions; or with a combination of both tumors. Bronchial carcinoids and papillomas, endobronchial sarcoidosis, and broncholiths have been associated with wheezing.
Central airway lesions. Table 2 lists a number of lesions that can cause complete or partial airflow obstruction in the large airways. The clinical manifestations include intermittent wheezing that frequently is associated with terrifying episodes of stridor and severe spasms of coughing. In addition, an irritating reflex mechanism of focal central lesions may induce diffuse bronchoconstriction that results in widespread polyphonic wheezing. Symptoms usually occur with exercise, when the airway diameter is reduced to about 8 mm. Pedunculated lesions may cause position-related symptoms that are suggested by the occurrence of unilateral or diffuse wheezing when the patient is recumbent. Most central airway lesions that are associated with wheezing require surgical therapy.

Metastatic disease. Endobronchial metastases from nonpulmonary tumors, such as seen in this patient, are rare but must always be considered in the differential diagnosis. The common primary sites include breast, colon, and kidney. Clinically significant lesions that cause symptoms of large airway obstruction or hemoptysis occur infrequently--probably in fewer than 5% of patients with extrathoracic cancers.

Nonallergic or mechanical. A number of clues to a nonallergic or mechanical cause of wheezing have been reported. These include the sudden onset of wheezing; a history of aspiration; nocturnal asthma alone; the absence of allergic markers, such as a history of atopy, hay fever, or eczema; the absence of a specific triggering mechanism or cause; a fair to poor response to bronchodilator therapy; and the presence of other signs of associated diseases, such as fever, hemoptysis, or cellulitis of the neck.

DIAGNOSTIC STUDIES

Radiography. The chest films of patients with wheezing may be normal. When a central lesion is present, the radiograph often will demonstrate signs of bronchial obstruction, such as segmental and lobar atelectasis with or without postobstructive pneumonia or distal consolidation. Rarely, a ball-valve effect of an obstructing tumor may cause distal air trapping and a distal hyperlucent lung, as was seen in this patient. A unilateral hyperlucent lung field can be visualized in patients with bronchial asthma; this may be produced by mucous plugs that can suddenly block the central airway and lead to worsening dyspnea.

Bronchoscopy. Results of bronchoscopy are definitive and provide an anatomic and pathologic diagnosis.

Other studies. Plain film tomography may reveal an endobronchial mass. Thin-section CT scans offer better diagnostic information; they help localize the tumor and may provide information regarding associated lymphadenopathy. Evaluation of the flow-volume loop may offer a clue to the diagnosis.

References:


Source URL: