

Chronic Cough

Apart from her cough, the patient had no symptoms

By Jason Agulnik, MD, CM, FRCPC.



A 69-year-old woman was referred, with a non-productive cough of six months duration. Her medical history included hypertension, rheumatoid arthritis and hypothyroidism. Her medications included indapamide, celecoxib, and levothyroxine. She had quit smoking more than 30 years ago.

The patient had presented to her physician when the dry cough had first started. She was otherwise asymptomatic.

At the time of this visit, she was on an angiotensin-converting enzyme (ACE) inhibitor for her hypertension, as well as methotrexate and celecoxib for her arthritis. Her chest x-ray revealed pneumonia and she was treated with a course of antibiotics.

Her cough persisted, remaining non-productive, so she returned to her physician and

was treated with a second course of antibiotics.

Despite two courses of antibiotics, she continued to suffer from a dry cough. She had a CT scan of the chest, three months after

her initial presentation, which came back as normal. At this time the ACE-inhibitor and methotrexate were discontinued and she was prescribed a budesonide inhaler and salbutamol. She experienced only minimal relief with these new medications, as she still complained of a cough and new dyspnea.

Two months later, the patient was diagnosed with right-sided breast cancer and underwent a lumpectomy and nodal resection. One out of 12 nodes were positive and the patient was started on tamoxifen.

As her chronic cough continued, she was referred for a pulmonary consultation. A chest x-ray was repeated (Figure 1). There was an increased density in the left upper lobe. A

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WHAT'S YOUR DIAGNOSIS?

chest CT scan was obtained one month later, which revealed some collapse of the left upper lobe with calcification and two non-calcified, 1 cm nodules.

Questions

1. What is the differential diagnosis?
2. Which test, if any, should be done in order to obtain a diagnosis?

Discussion and Answers



Figure 1: A chest x-ray showing a left upper lobe density.

This patient presented with a chronic cough. Chronic cough is defined as a cough which lasts

Table 1

Causes of chronic cough

- Post-nasal drip
- Asthma
- Gastroesophageal reflux disease
- Chronic bronchitis
- Bronchiectasis
- Medications
 - ACE-inhibitors
 - Beta blockers
- Bronchogenic carcinoma
- Eosinophilic bronchitis
- Interstitial lung disease
- Post-infectious
- Congestive heart failure
- Aspiration
- Foreign body

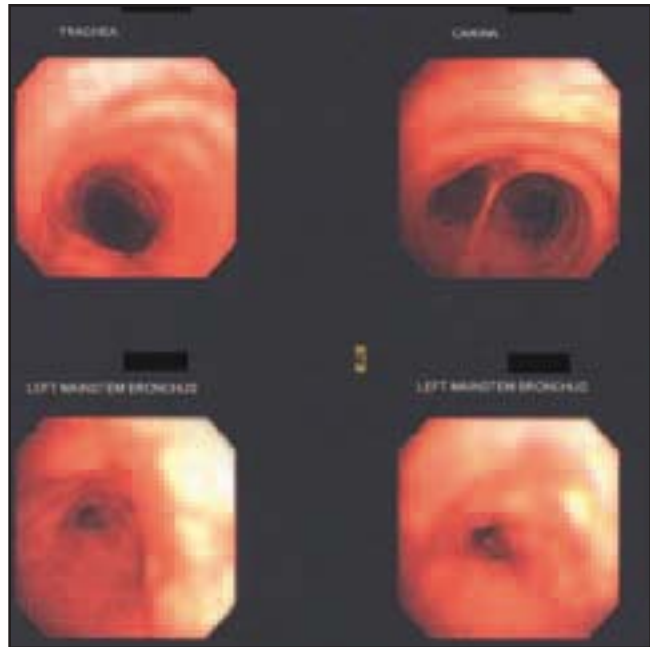
for more than three weeks. Some of the most common causes include postnasal drip, asthma, and gastro esophageal reflux disease (Table 1). With this patient, none of the above-mentioned symptoms were likely to be the cause, given her history and lack of improvement with budesonide and salbutamol. In addition, her symptoms did not improve with the discontinuation of the ACE inhibitor, therefore this was not likely to be the cause.

The differential diagnosis for this patient included metastatic breast cancer to the lung, interstitial lung disease, or an infectious process. Metastatic breast cancer seemed most likely with possible endobronchial spread, given the CT chest results. Interstitial lung disease, secondary to rheumatoid arthritis or methotrex-

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ate, was also possible in this patient, but was much less likely, as there was no interstitial pattern on chest x-ray or CT chest. In addition, the patient was considered somewhat immunocompromised, given her history of methotrexate use and recent treatment of breast cancer with tamoxifen. Therefore, infectious process including tuberculosis was also considered.

A bronchoscopy was performed for diagnosis (Figure 2). The trachea and carina were normal. Endobronchial lesions were visualized in the left mainstem bronchus. These were biopsied and sent for pathology and microbiology. *Mycobacterium tuberculosis* was isolated from the culture and PCR was positive for *M. tuberculosis*. The patient was initially treated with four antituberculous medications; isoniazid with pyridoxine, ethambutol, pyrazinamide and rifampin for two months. After two months, as the organism was found to



Bronchoscopy showing normal trachea and carina (upper images) and endobronchial lesions in the left mainstem branches (lower images).

be sensitive to all four medications, she was treated with isoniazid with pyridoxine and rifampin for the next four months.

WHAT'S YOUR DIAGNOSIS?

In addition, the public health department carried out an epidemiologic investigation in order to delineate additional individuals that may have been exposed unknowingly to the organism expectorated by this patient. [Dx](#)

Recommended Reading:

1. Long, R: Canadian Tuberculosis Standards. Fifth Edition. Canadian Lung Association and Health Canada, 2000.

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