

When Neck Deep In Red Herrings: Take A Deep Breath

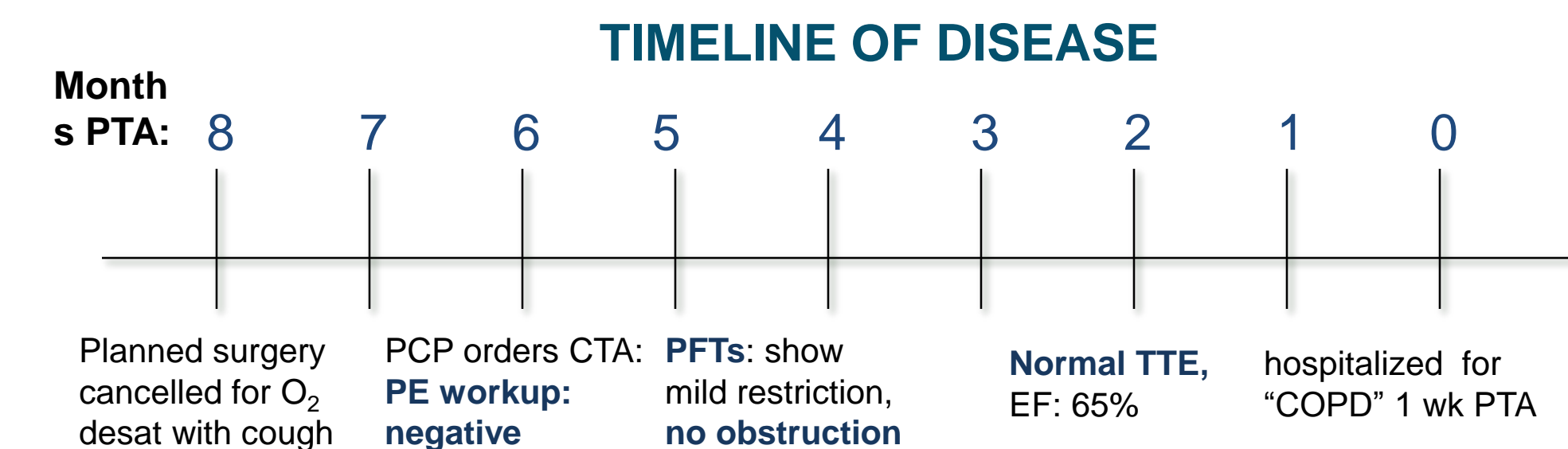
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Introduction

Dyspnea is a frequent presenting complaint and among the most common concerns for which patients seek medical attention¹.

Case Presentation

59 year old white woman presented with unimproved wheezing, productive cough and dyspnea on exertion one week after hospitalization for presumed COPD exacerbation, despite completing a five day course of steroids, antibiotics, and bronchodilators.



Medical Hx

Behçet's disease
Breast Cancer
-on Tamoxifen
"Asthma"

Surgical Hx

Double Mastectomy
Reconstructive breast surgery

Family Hx

Maternal history blood clots

Social Hx

90 pack year smoking

Review of Systems

Notable for coryza and headache. Otherwise negative except as per HPI.

Physical Exam

Vital Signs: Stable, SaO₂ 94% RA, O₂ desaturation with ambulation to mid 80s.
Well appearing, obese white woman, no respiratory distress at rest. Pulmonary exam is notable for coarse late inspiratory and expiratory wheezes, decreased sounds R base, cardiac exam is unremarkable. One aphthous ulcer, no rashes.

ED Imaging, Interpretation

Laboratory Findings

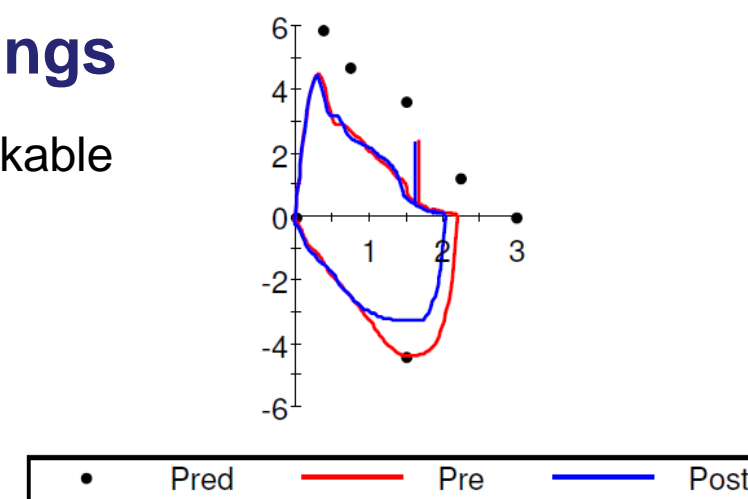
CBC, Chem 7: unremarkable
Troponins negative
pBNP: 209
D-dimer 31 (nl)
ABG: PaO₂ 67,
A-a gradient 31 (H)

PFTs

Mild restriction, high normal FEV1/FVC ratio and symmetrically decreased FVC, no significant obstruction

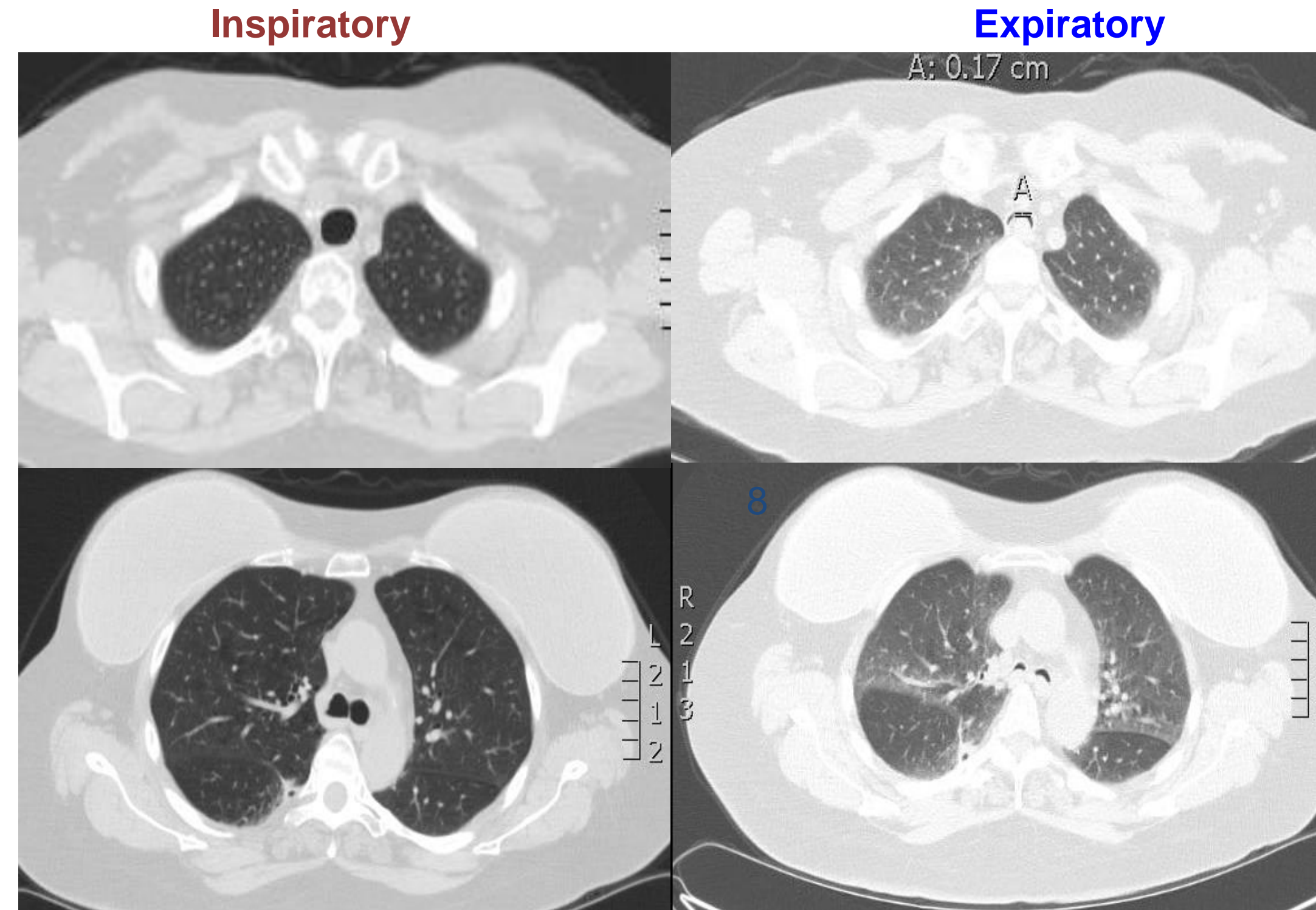


Clear lungs. Chronically elevated right hemi-diaphragm (since 2 years PTA)



Hospital Course

- Initial CT of chest: no evidence of pneumonia or interstitial processes, notable for chronically elevated right hemi diaphragm and R>L bibasilar atelectasis
- TTE w bubble study: no intra-cardiac shunting to explain elevated A-a gradient
- Given non-resolution of symptoms with empiric treatment for COPD, predominance of symptoms with cough, CT scan with **inspiratory** and **expiratory** phase was obtained:



Expiratory phase CT was obtained which demonstrated **near-complete collapse of the expiratory trachea from 17 to 2 mm on expiration**, the same findings were present in the bronchioles to a lesser degree, most consistent with the diagnosis of **tracheobronchomalacia**.

She was managed with conservative therapy for her URI. Pulmonology was consulted inpatient and recommended a CPAP evaluation, Outpatient follow-up scheduled with them.

Discussion

- The trachea and bronchi are normally flexible and compliant.
- In inspiration airways dilate and lengthen, and during expiration, they narrow and shorten.**
- In mild tracheomalacia, dynamic collapse can be accentuated and unmasked by infection.⁴
- This patient's hypoxia is not entirely explained by TM
- A-a gradient attributed in part to increased shunting through areas of atelectasis²

Tracheobronchomalacia

Tracheobronchomalacia (TBM) is an under recognized cause of dyspnea.

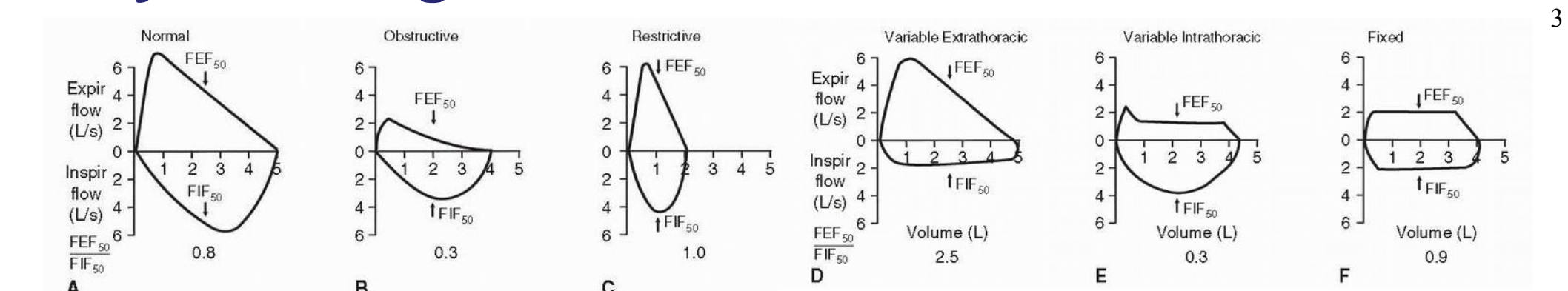
The diagnosis is made by **excessive airway collapse** of at least **50% with exhalation**.²

Acquired tracheobronchomalacia can be local, often secondary to prolonged mechanical ventilation, or diffuse as is seen in this patient.

The latter pattern is often seen concurrently with COPD or chronic inflammation, but neither is defined as being causative.

The main symptoms of TM in adults are dyspnea, cough, sputum production, and hemoptysis. These symptoms are non-specific and are often attributed to emphysema, chronic bronchitis, cigarette smoking, or asthma.²

Key Learning Points



Many patients with the clinical diagnosis of COPD have an inconsistent physiologic diagnosis.¹

Close to 20% of patients diagnosed with COPD had spirometry with restrictive lung physiology, and another 10% had normal lung function.²

PFTs help to increase the accuracy of diagnoses made through history and physical alone.

However, even when they are obtained, many patients are given an incorrect diagnosis with possibly inappropriate treatment.⁵

PFTs may be useful in evaluating a patient with suspected TM, but they are not diagnostic.²

References

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