# 6/24/22 Morning Report with @CPSolvers

***Case Presenter**: Alexander Smith (@AdotSmitty) **Case Discussants**: Reza and Rabih (@rabihmgeha ) and (@DxRxEdu )*

**CC**: SOB and cough

**HPI**: 58 yo M p/w SOB and cough of 4 weeks duration. The patient had a viral URI a few days ago. His overall condition improved but the SOB worsened and presented to the hospital because of the Productive cough.

Hospital course summary: patient has been on abx (levofloxacin) for 3 days, feeling better but consistent O2 requirement of 3L, saturating at 92-93%, which has remained at this level for the 4 day hospital stay. His cough/dyspnea has resolved but hypoxemia has been persistent.

**PMH**:
HTN

**Meds**:
Levofloxacin

**Fam Hx**:
Diabetes in parent

**Soc Hx**:
Lives at home alone

**Health-Related Behaviors**:
No smoking, alcohol, drugs

**Allergies**:
None

**Vitals**: **T**: 37 **HR**: 95 at rest, 120 when up **BP**: 110/70 **RR**: 16 **$SpO_2$**: 92-93 at rest on 2-3L NC, 88-89% when up, **BMI:** 40
**Exam**:
**Gen**: Comfortable, don't use muscles for respiration
**HEENT**: no scleral icterus
**CV**: No murmurs
**Pulm**: decreased lung sounds at b/l bases. No rhonchi, wheezing
**Abd:** Non tender, wnl
**Neuro**: wnl
**Extremities/Skin**: Well perfused

**Notable Labs & Imaging**:
**Hematology**:
WBC: 6.5 (decreasing over hospital stay from 15) Hgb 11 Plt: 150
**Chemistry**:
Na: 138 K: 4 Cl: 90 CO2:30 BUN:18 Cr: 0.6 glucose: 140 Ca: 8.9
Phos: 3.8 Mag: 2.2 AST: normal ALT: normal T. Bili: 0.3 Albumin: 3.5
ABG: ph 7.43 pCO2 55 pO2 70 2 L NC

**Imaging**:
EKG: sinus tachycardia
CT: Multifocal consolidations, no pulmonary artery thrombus, non dilation of main pulmonary artery trunk

Further management: Ambulate/chest PT (vibrating chest devices). Hypoxia improved. 95-96% on 1L NC at rest, desaturating when walk.

Dx: Low-grade hypoxemia, likely w/ component of obesity hypoventilation syndrome

**Problem Representation**: 58yo M with a BMI of 40 presenting with a 4week history of SOB and cough found to have persistent hypoxemia, chronic respiratory acidosis w/ metabolic compensation, consistent w/ obesity hypoventilation syndrome.

**Teaching Points (Madellena)**:
**Approach to Hypoxemia:** think about normal journey of O2 into bloodstream. Pathology at any site > hypoxemia
- O2 acquisition: low RR, chest wall abnormality, high altitude
- O2 journey to alveoli: alveoli filled w/ substance, alveolar collapse, upper airway obstruction
- Diffusion alveoli > bloodstream: PE, cardiac/pulmonary shunt
- Cough > prioritize pathology in alveolus

https://www.youtube.com/watch?v=TWSu8CP9NSs&t=16s
SOB is subjective. Hypoxemia is not.
Disconnect in this case: no dyspnea but there is hypoxemia
Aspects of presentation to consider: Preceding course before hypoxemia. Timecourse: lingering hypoxemia
**ABG: a picture of obesity hypoventilation syndrome (OHS)**
pCO2 elevated by pH not low with RR wnl > chronic resp acidosis w/ appropriate metabolic compensation > hypoventilation
Impaired movement of air into chest or obstructive problem.
No wheezing > impaired movement to chest.
Issue w/ diaphragmatic power? (OHS)
Hypoxemia in OHS: atelectasis > V/Q mismatch, Chronic pHTN
Hypoxemia unexplained by intrapulmonary pathology. Could they have cardiac shunt?
Potential explanation: Hypoxemia > hypoxia-induced vasocosntrction > acute pulmonary HTN > opens PFO > R to L shunting. Echo w/ bubble to evaluate further
Important to consider vulnerability in a host & expected course