

Acute Respiratory Distress

Respiratory Distress:

Amos Charles, MD
Clinical Associate Professor of Medicine
Warren Alpert School of Medicine of the Brown University
Providence Rhode Island.

Waleed Ibrahim-Ali
Assistant Professor of Clinical Medicine
University of Illinois College of Medicine at Peoria

Specific Learning Objectives:

Knowledge:

Subinterns should be able to:

- 1) Recognize the need for an immediate response
- 2) Recognize the different causes and management approach to patients with acute respiratory distress.
- 3) Recognize the symptoms and signs of acute respiratory distress
- 4) Assess the severity of patient condition on clinical presentation
- 5) Know the indications for emergent treatment
- 6) Know the indications for noninvasive mechanical ventilation
- 7) Know the indications for invasive mechanical ventilation
- 8) Initialize immediate treatment to stabilize the patient prior to a definitive diagnosis
- 9) Recognize limitation (know when to request for immediate help from attendings, fellows and senior residents)
- 10) Indications for transfer to ICU
- 11) Recognize the diagnosis of acute pulmonary embolism
- 12) Recognize the diagnosis and management of massive pulmonary embolism
- 13) Recognize the diagnosis and management of acute pulmonary edema

Skills:

Subinterns should demonstrate the ability to:

- 1) Rapidly assess the patient's condition
- 2) Develop a management and treatment plan
 - a) create a differential diagnosis
 - b) provide appropriate emergent and supportive care
 - c) able to communicate patient's status with others

Attitudes and professional behavior:

Subinterns should demonstrate:

- 1) Compassion when reporting acute changes in patient's status to family members
- 2) Respect for patient wishes with regard to noninvasive and invasive mechanical ventilation
- 3) Understanding of advanced directives and code status
- 4) Understanding of the limitations of treatment in situations of terminal illnesses

Case I:

You are called to evaluate Mr. X, a 55 y/o male, admitted to the hospital two days ago with the diagnosis of acute pancreatitis. The nurse asks that you come immediately to the step-down unit because Mr. X is acutely dyspneic and noted to be cyanotic having bluish discoloration of his lips, fingers and toes.

Question 1

Do you need additional information from the nurse?

Question 2

What immediate orders would you give the nurse?

Question 3

What is your thought process at this time in terms of a differential diagnosis and immediate evaluation? (e.g. elevator thoughts)

Question 4

What specific information would you like to obtain from the physical examination?

Physical examination:

On examination, Mr. X is awake, alert but acutely dyspneic with rapid shallow breathing (RR 30-40) and is using his accessory muscles of respiration. His breathing is noisy with audible high-pitched wheezing. He is responsive but unable to express himself in full sentences (pauses after each word to catch his breath). He is sitting upright in bed, restless and agitated. His lips are cyanotic with dry mucous membrane.

Vitals: BP 90/50 HR 110 RR 30-40 T afebrile. Pulse oximetry: 75% on 100% NRM

Neck: Internal jugular veins distended with pulsus paradoxus

Heart: distant S1/S2, tachycardic with regular rate

Lungs: distant breath sound with diffuse wheezing

Abd: soft, nondistended,

Ext: No clubbing, or edema

Neuro: No focal motor deficits

Question 5

What would do you do next?

Questions 6

What can be gained from reviewing the patient's medical records?

Mr.X has a history of severe COPD and is currently on home oxygen at 2liters. His other past medical history includes hypertension and osteoarthritis. He is currently on a Fentanyl PCA for acute pancreatitis. He has had multiple exacerbations of COPD and the last admission was four months prior to this admission. Patient is a full code

His labs reveal:

ABG: ph 7.15/ pCO2 85/ pO2 45, WBC 13.5/ HgB 15/ Hct 45/ Plat 300K

Na 140, K 3.1, CL 100, CO2 42, BUN 35, Creatinine 1.5, Glucose 245;

EKG: sinus tachycardia with P-pulmonale, RAE, nonspecific ST-T abnormalities;

Chest X-Ray shows hyperinflated lungs with no evidence of pneumothorax or infiltrate.

Question 7

What is your most likely diagnosis?

Question 8

What are your options at this point & how would you proceed?

Question 9

Should you rediscuss code status with the patient or his/her healthcare proxy at this point?

Case II

This is your second call night as an intern. You are sitting in the physicians' lounge hoping it would be a quiet night. Your pager goes off; it is your senior resident. She wants you to go and evaluate a patient in the General Medical Floor with shortness of breath. She provides you the details she received during check out. Patient is a 65 year old woman with multiple co-morbid conditions that include COPD & cardiac disease and she was admitted with R sided pneumonia 4 days ago. She was started on IV Antibiotics and was recovering well. The team did not anticipate any problems. The senior resident was paged by the nurse stating that the patient has been complaining of increasing shortness of breath and has been working hard to breathe.

You arrive at the bedside...

Question 1

What critical information would you like to obtain at this point in time?

Question 2

What historical questions would you ask the patient and what physical exam findings will you focus on as you examine the patient?

Patient denies chest pain, just cannot find a comfortable position and cannot lie down in bed. General examination, patient is in moderate distress, diaphoretic, using accessory muscle of breathing. Vital signs reveal a HR 120/min, BP 110/55, Temperature 100 degree Fahrenheit, RR 37/min and oxygen saturation of 83% RA on 2 liters. Neck exam shows has no distended neck veins. Cardiac exam reveals tachycardia, normal S1 and S2. Lung exam reveals bilateral wheezing & crackles at the R base. There is no tracheal deviation and no crepitus on palpation of the chest. Skin exam did not reveal any rashes. There was minimal bilateral pitting edema and questionable calf tenderness.

Question 3

What is your differential diagnosis? What is the next step in patient management?

You place the patient on non rebreather face mask. Oxygen saturation improves to 95%. You do additional chart review that reveals that the patient has an abnormal lung nodule on a recent CXR that needs follow up CT scan. Her DVT prophylaxis was ambulation only, but the nurse told you the patient has not been ambulating.

Stat EKG reveals sinus tachycardia without any acute ischemic changes. Arterial blood gas reveals a pH 7.5, pCO₂ 35, pO₂ 45. Patient is given bronchodilator therapy and high flow oxygen but continues to be tachypneic and tachycardic. The senior resident arrives on the scene and you update her on the patient's progress.

Question 4

Your senior resident asks, "What is your diagnosis based on your physical exam and laboratory data?"

Question 5

Do you need additional diagnostic tests at this point?

Question 6

If you feel you need additional tests which one(s) will you order & how useful are those tests for your decision to initiate therapy?

Question 7

At which point would you initiate specific therapy?

Chest X-ray reveals a right lower lobe infiltrate that is unchanged from previous X-Rays. No other changes noted on the chest X-Ray. Her cardiac isoenzymes were negative. Her electrolytes and renal function was normal. Her BNP was minimally elevated at 150. Chest CT angio revealed pulmonary embolus in the right pulmonary artery

Question 8

Does this patient have Massive Pulmonary Embolism?

Patient was transferred to the ICU and started on enoxaparin and warfarin and transferred to the floor 4 days later in a stable condition

Question 9

How would you manage this case if the patient has evidence of right heart failure with hypotension?

Question 10

What would be your diagnosis and management if the patient above had different findings listed below?

i) The CXR showed diffuse bilateral pulmonary infiltrates. Hypoxemia DID NOT improve with supplemental oxygen.

ii) Decrease air entry on lung exam, Prolonged expiration with expiratory wheezes, ABG: pH 7.2, pCO₂ 90, pO₂ 60.

iii) Elevated JVD, bilateral crackles on lung examination, Presence of S3 gallop on cardiac exam, BNP of 2300 (very high) CXR revealing cardiomegaly and new bilateral pulmonary infiltrates.

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