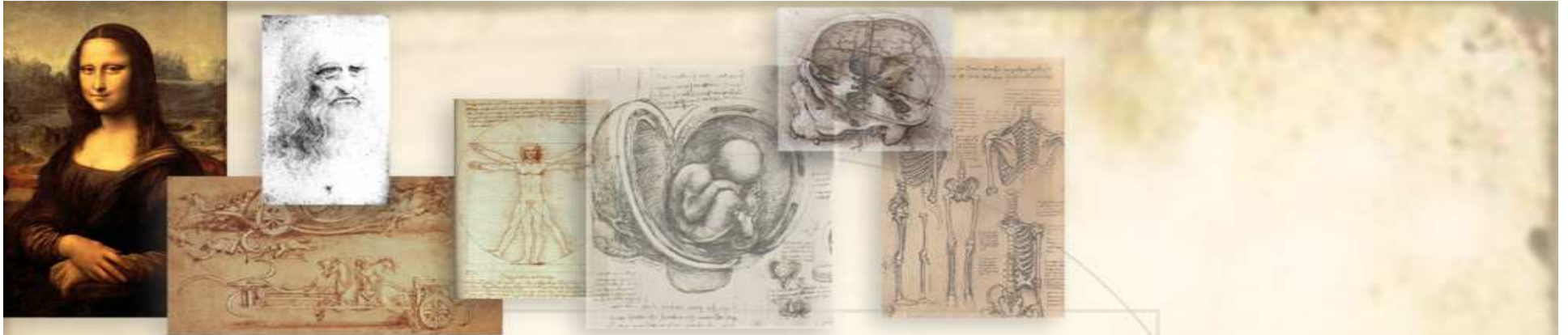


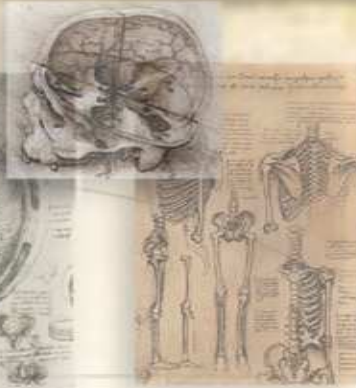
Treating Dyspnea in Advanced Cancer and E/S COPD

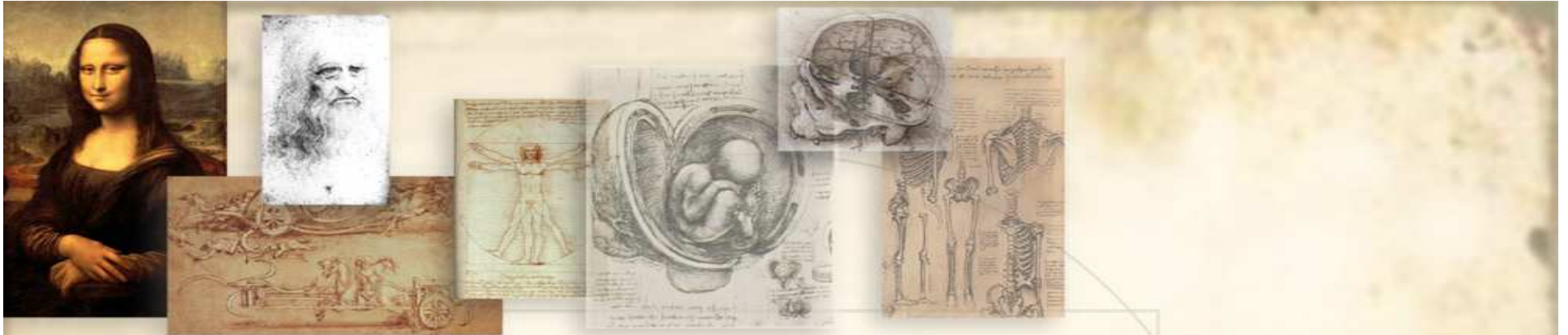
Barb Supanich, RSM, MD, FAAHPM
Holy Cross Palliative Care
Medical Director
April 8, 2010



Learner Objectives

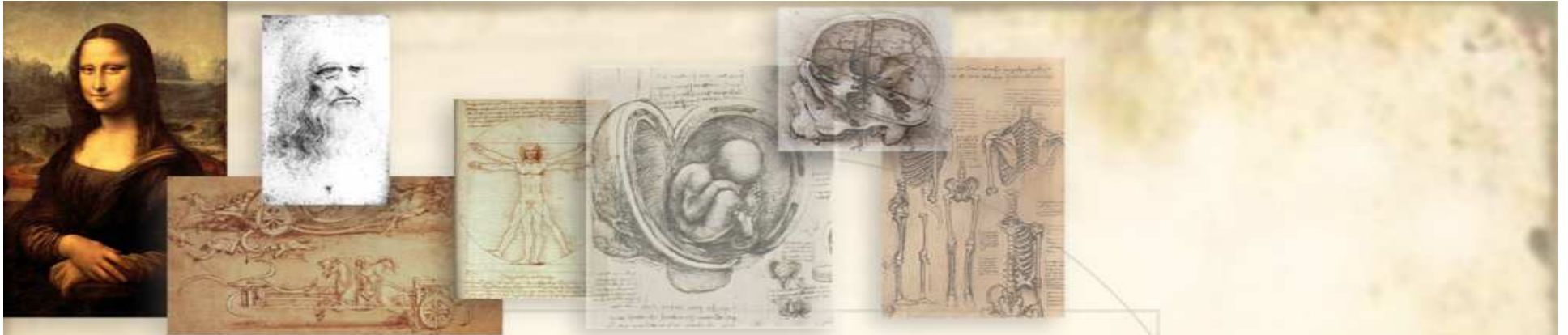
- Describe the pathophysiology of dyspnea
- Describe common etiology and symptoms of dyspnea
- Discuss management of common complications of advanced cancer
- Discuss pharmacologic and non-pharmacologic treatments for dyspnea





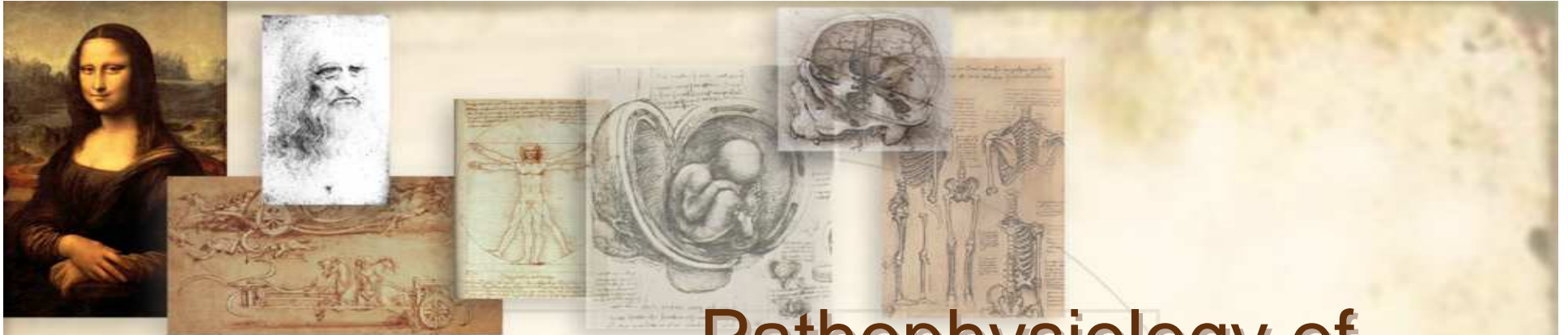
Pathophysiology of Dyspnea

- Experience of dyspnea arises from multiple receptors integrated at various levels in the CNS.
- Dyspnea involves both the perception of the sensation by patients and their reaction to the sensation.
- Normal respiration is a sensorimotor activity of the respiratory control area of the brainstem.



Pathophysiology of Dyspnea

- The brainstem respiratory controller:
 - maintains blood gas and acid-base homeostasis.
 - coordinates activity of mechanoreceptors in respiratory muscles (diaphragm)
 - various sensory receptors in the lungs and airways
 - chemoreceptors in the carotid bodies and on the ventral surface of the medulla
 - all of the above are processed in the bulbopontine region to produce an output that adjusts the rate and depth of normal respiration.



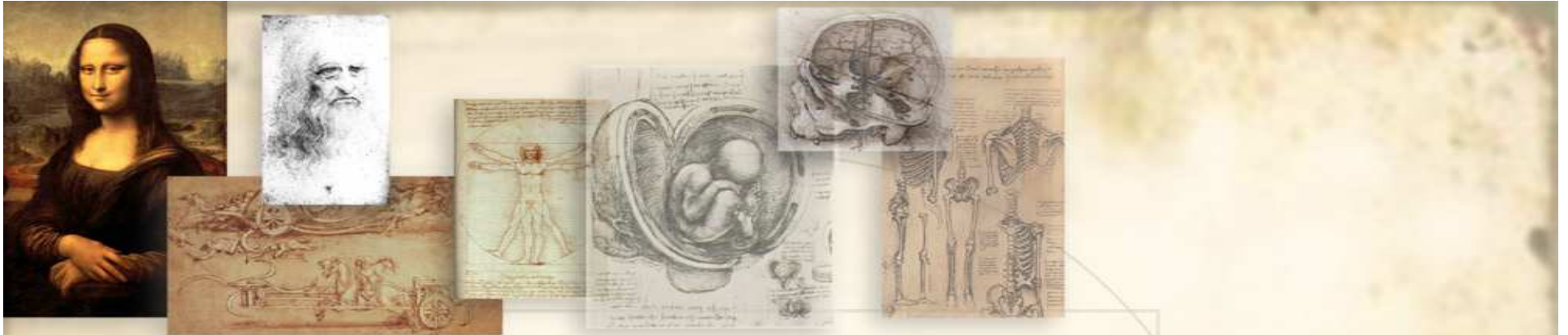
Pathophysiology of Dyspnea

- Behavioral Control of Breathing:
 - Suprapontine areas of the brain
 - Motor cortex and cerebellum
 - implement voluntary control, protective reflexes (cough) or emotional influences
 - Register a conscious awareness of need to breathe



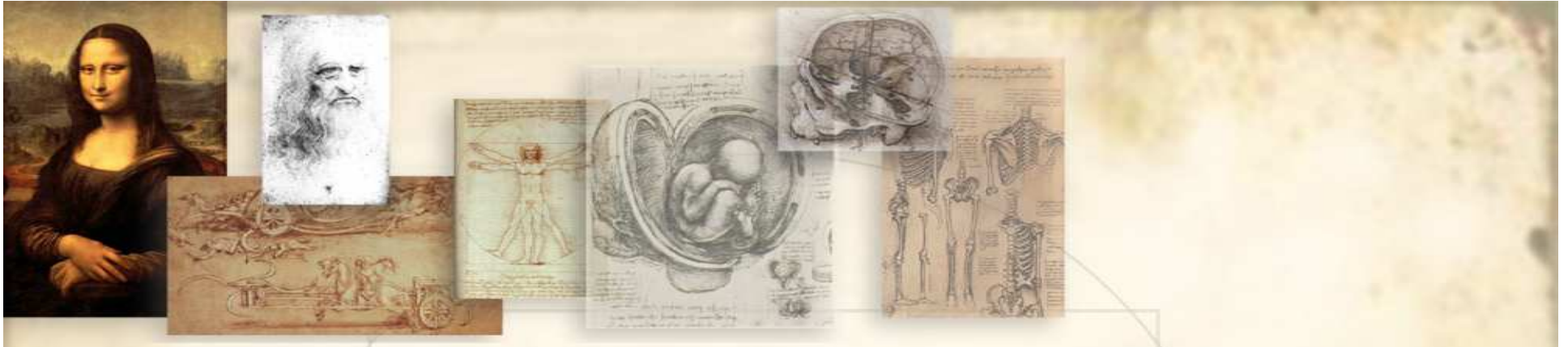
Pathophysiology of Dyspnea

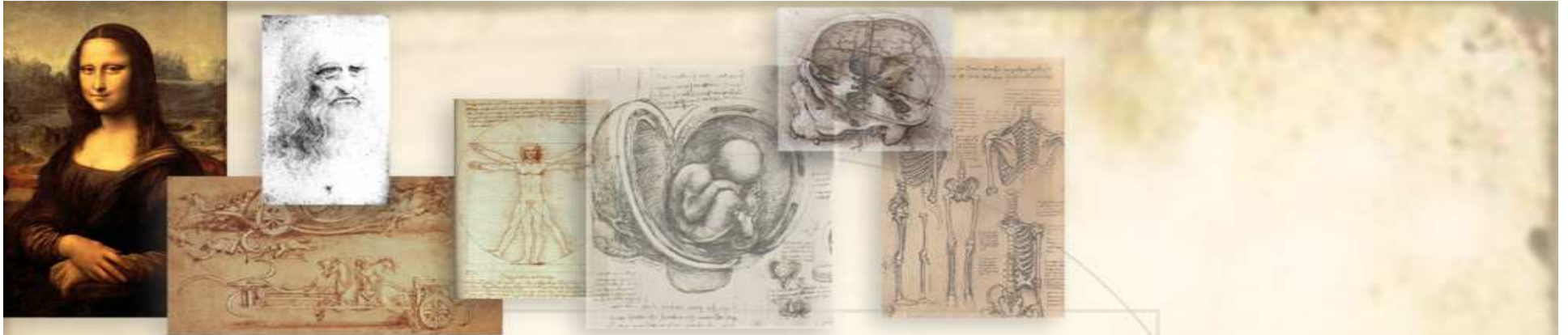
- **Pathologic States**
 - Mismatch between what the body requires and what the resp system can provide.
 - This mismatch drives the sensation of breathlessness or dyspnea.
 - Relatively small improvement in some of the causes of dyspnea can give significant relief to the patient and their family.



Prevalence of Dyspnea

- 20-60% of all cancer patients
- Much more prevalent in E/S CHF and COPD than previously thought
- Quite common in AIDS patients
- More severe and frequent near EOL in all disease states
- Lung, pleural and mediastinal involvement
- Low functional status with severe dyspnea
- Often underreported and under recognized





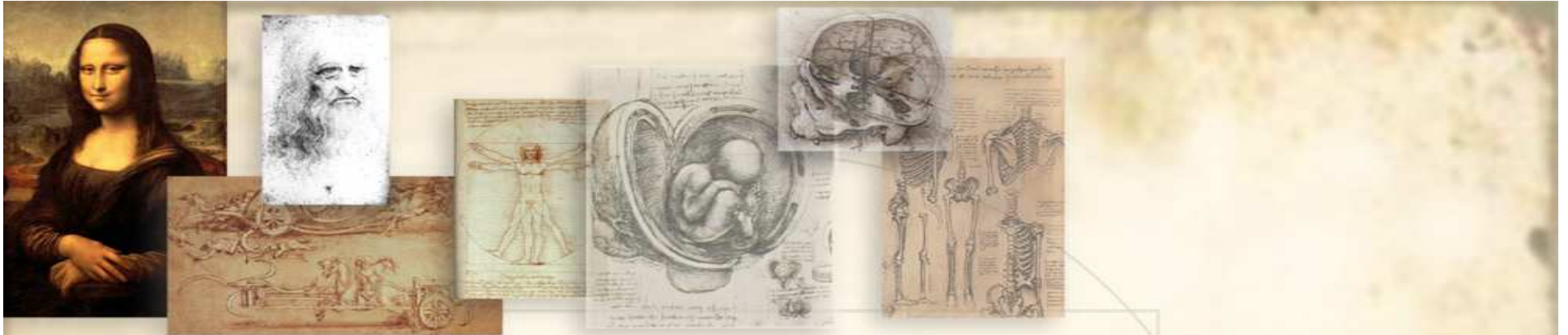
Etiology and Symptoms of Dyspnea

- Causes of dyspnea in cancer
 - Direct tumor effects
 - intrinsic or extrinsic airway obstruction
 - pleural involvement
 - parenchymal involvement (primary or mets)
 - Superior vena cava syndrome
 - Indirect Tumor effects – pneumonia or P.E.
 - Treatment related – radiation/chemo induced pulmonary fibrosis or chemo induced cardiomyopathy



Etiology and Symptoms of Dyspnea

- **Causes of dyspnea in COPD**
 - Peripheral and central chemoreceptors are stimulated by low pO_2 or high pCO_2
→ stimulates the resp center and increases resp rate and effort.
 - Hypercapnea ($\uparrow CO_2$) causes dyspnea
 - Acute and compensated
 - No dyspnea at rest, unless terminal or has other pulm illness like pneumonia



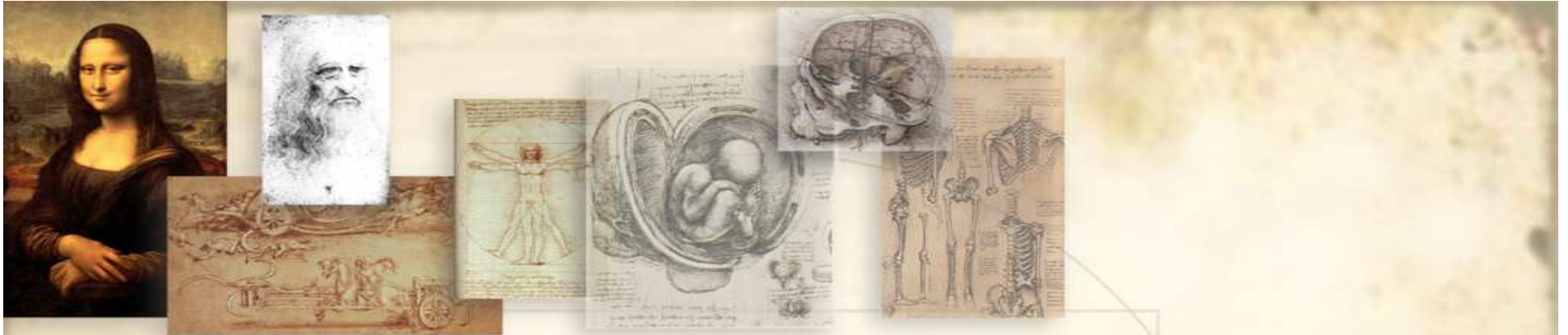
Etiology and Symptoms of Dyspnea

- COPD etiologies:
- Upper airway and facial receptors modify the sensation of dyspnea
 - Decrease in dyspnea when breathing cooler air
 - Use of fan to relieve dyspnea



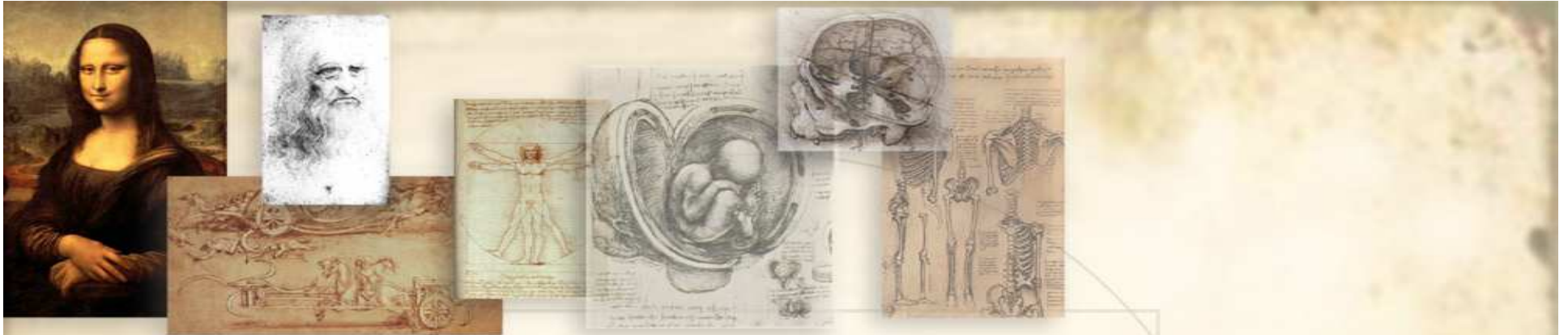
Etiology and Symptoms of Dyspnea

- **Lung Receptors**
 - Stretch receptors in airways: respond to lung inflation and participate in termination of inspiration
 - Irritant receptors in airway epithelium: mediate bronchoconstriction in resp to mech or chem stimuli
 - Juxtapulmonary receptors in the alveolar walls and blood vessels that respond to interstitial congestion



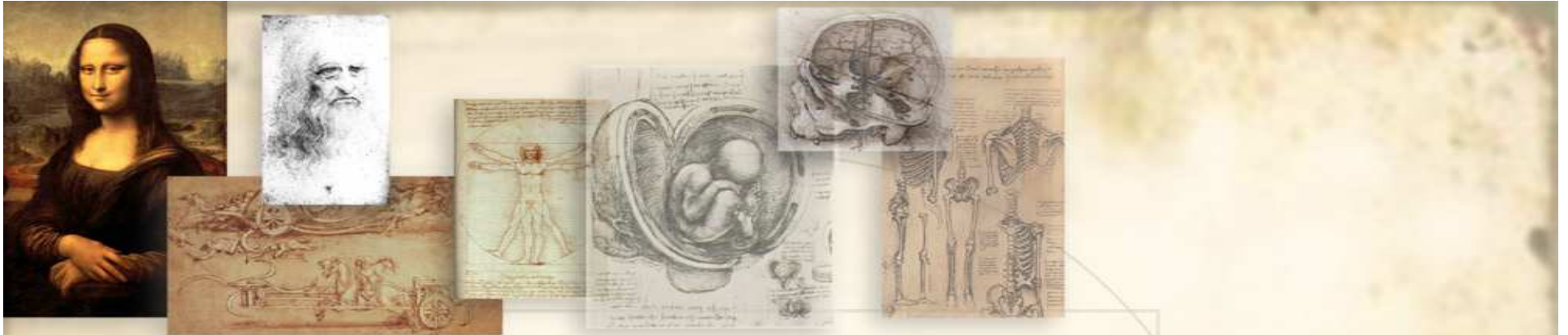
Etiology and Symptoms of Dyspnea

- COPD patients adapt by –
 - Pursed lip breathing - - alters transmural pressure in airways
 - Disease changes either the diameter of airway (narrows) or ability to move air across the airway → DYS-PNEA.
- Chest wall receptors
 - Mechanically unable to take a deep breath – DYS-PNEA
- Afferent Mismatch – brain “expecting” a certain pattern of breathing – different one occurs --- DYS-PNEA



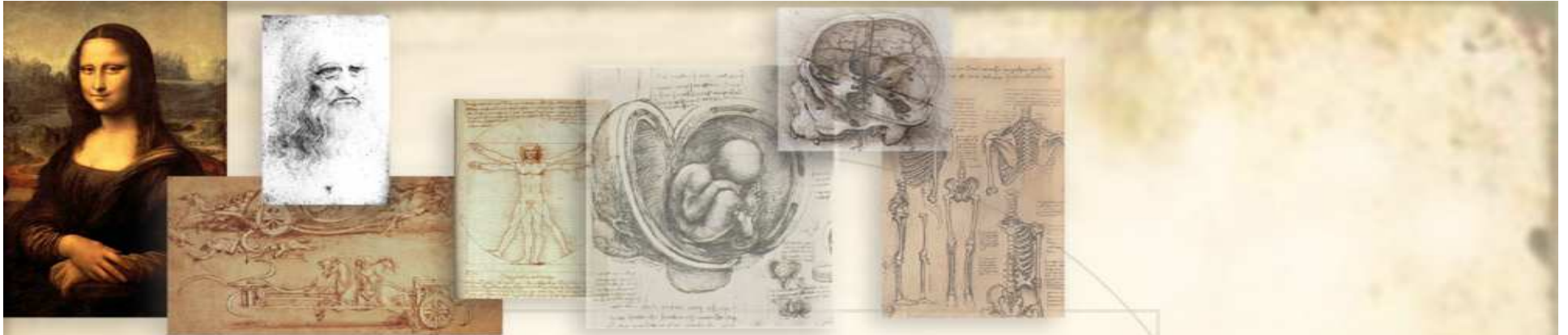
Assessment of Dyspnea

- **Objective Signs**
 - Tachypnea/Tachycardia
 - Use of accessory muscles of respiration
 - Nasal flaring
 - Grunting
- **Subjective Experience**
 - Pt may not have obj. sx, yet have significant functional impairment



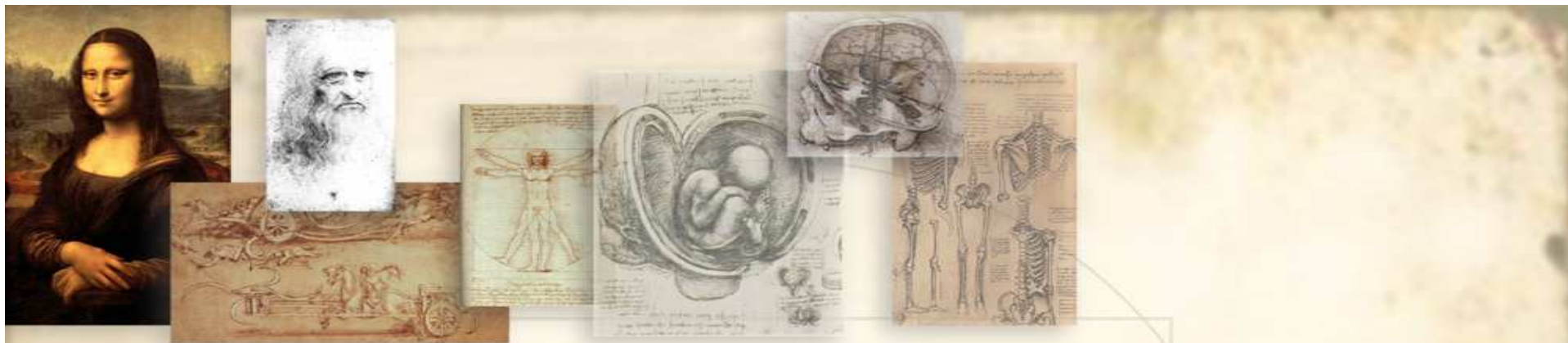
Assessment of Dyspnea

- Comprehensive H&P
- Use of lab and radiology studies to look for reversible or easily treatable causes.
- Pulse ox vs. ABG's
- Maximal Inspiratory Pressure (MIP) – measures strength of diaphragm and other resp muscles



Assessment Tools

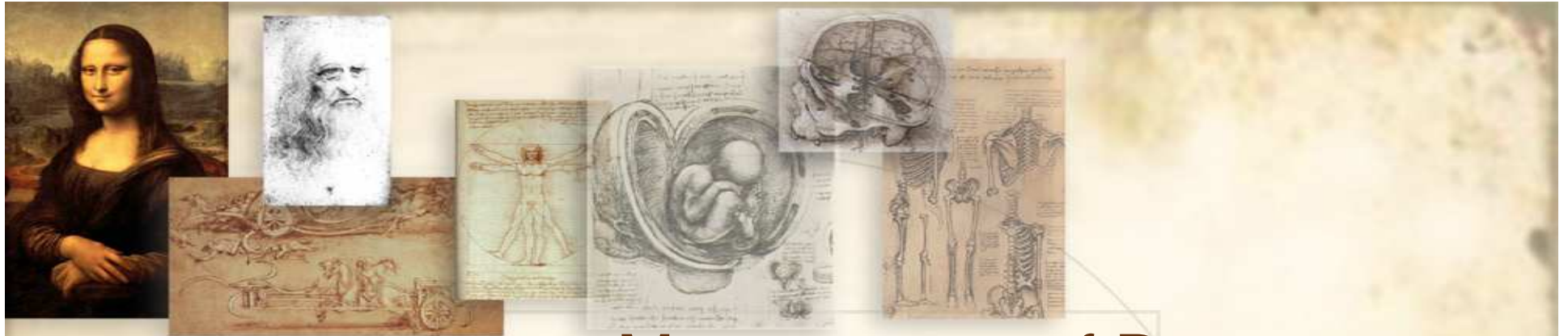
- **Functional Dyspnea Scale**
 - 0 – not troubled except by strenuous exercise
 - 1 – hurrying on level ground or walking up short incline
 - 2 – walks slower due to breathlessness on level ground or has to stop due to dyspnea
 - 3- stops for a breath after walking 300 ft. or after a few minutes of walking
 - 4- breathless during dressing or undressing or at rest



Assessment Tools

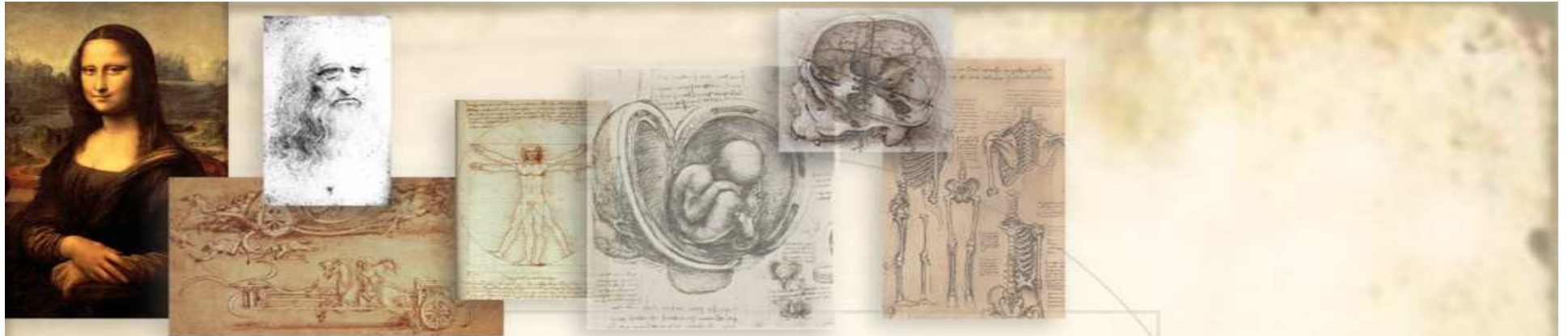
- Assessing in ICU or Dying Patients
- Behaviors
 - Restlessness
 - Panic facial expressions
 - Look of fear
 - Sense of impending doom
- Physiologic signs
 - Nasal flaring, acc. muscle use, grunting at end expiration, or tachypnea/tachycardia





Management of Dyspnea

- **Tumor Obstruction**
 - Chemo/rad/hormone tx for sensitive tumors
 - Laser ablation with bronchoscopy
- **Carcinomatous lymphangitis**
 - Trial of dexamethasone
 - Chemotherapy for sensitive tumors
- **Bronchospasm**
 - Bronchodilator neb therapies
- **Pleural Effusions**
 - Thoracentesis
 - Pleurodesis



Management of dyspnea

- **Ascites**
 - Paracentesis
- **Cardiac Failure**
 - Diuretics, ACE-I, ARB's, B-blockers
- **Chest Infections**
 - Antibiotics, neb treatments
- **Anemia**
 - Transfusions



Nonpharmacologic Treatments

- Change position in bed
- Open a window
- Play soothing music
- Bedside fan
- O₂, especially for lung cancer and COPD
- Simple reassurance
- Relaxation tx, art tx, guided imagery, massage tx, prayer



Pharmacologic Treatments

- Bronchoconstriction
- E/S COPD, SVCS, Lymphangitic carcinomatosis
- Cough
- CHF
- Anxiety/Dep/Panic
- Pneumonia
- Albut/ipratrop nebs
- Steroids
- Opioids, anti-tussives
- Diuretics, ACEI/ARB's
- SSRI's, benzo's
- Antibiotics, O2



Terminal Pneumonia

- Antibiotics are not effective or helpful
- Manage symptomatically
 - O₂
 - Opioids – morphine 2-5 mg/hr and titrated by half the initial dose every 20 minutes to relieve dyspnea
 - Anxiolytics for anxiety – Ativan 1-2 mg IV every 4-6 hrs ATC OR infusion at 1-5 mg/hr
 - Levsin 0.125 mg 1-2 SL for terminal secretions



Treatment of Dyspnea at EOL

- Morphine Sulfate 5 -10 mg IV bolus
- Morphine Sulfate Continuous Infusion, 2-5 mg/hr, titrate by half the starting dose every 20-30 minutes until dyspnea is relieved.
- Ativan 1-5 mg IV every 4 hrs ATC
- Ativan 1-5 mg/hr continuous infusion, titrate until patient's dyspnea is relieved.



Treatment of Dyspnea at EOL

- Midazolam
 - Bolus of 2-4 mg IV
 - Infusion of 2-5 mg/hr titrate until dyspnea is relieved
- Haloperidol
 - 0.5 to 10 mg every 6 hrs



Summary

- Dyspnea is a distressing symptom and air hunger sensation for patients with many chronic illnesses as well as at EOL.
- There are several excellent dyspnea assessment scales.
- Reviewed use of nonpharmacologic and pharmacologic treatments.
- REMEMBER the PATIENT living with or dying with this distressing symptom and their family.
- Resist temptation to do tests when the patient is dying --- listen to them and relieve their suffering

