Module: Dyspnea

Learning Objectives

Attitudes

- Value that dyspnea is a common symptom at end of life and has a significant impact on quality of life.
- Recognize that treating dyspnea with opioids is ethically appropriate if the intent is to relieve suffering.

Knowledge

- Identify at least two disease processes resulting in dyspnea from each of the following categories: (a) obstructive airway disease, (b) lung parenychymal/pleural pathology, (c) cardiac disease, (d) chest wall/respiratory muscle pathology, (e) vascular pathology.
- Describe available validated rating scales for evaluating dyspnea.
- Explain at least four nonpharmacologic treatments for dyspnea.
- Understand the role of opioids, benzodiazepines and other pharmacologic approaches in managing terminal dyspnea.
- Explore the medical evidence and ethical arguments concerning opioid-induced respiratory depression, medical aid in dying, and euthanasia in relation to opioids used to treat dyspnea.

Skills

- Exhibit appropriate skills necessary to assess dyspnea in a patient.
- Demonstrate effective communication skills in discussing the treatment of dyspnea with patients and famillies.
- Construct an initial treatment plan for patients with dyspnea including choosing an intial opioid dose.
- Revise treatment plan for patients with dyspnea that is refractory to an intial treatment approach.

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Definition

Dyspnea is a subjective sensation of difficulty breathing, or an abnormally uncomfortable awareness of breathing. Dyspnea is experienced when there is an imbalance between the perceived need to breathe and the perceived ability to breathe. Dyspnea is a subjective symptom and does not always correlate with objective measures like oxygen saturation or respiratory rate. Dyspnea is sometimes colloquially referred to as shortness of breath.

Differential Diagnosis

- Obstructive airway disease
    - Asthma
    - Chronic obstructive pulmonary disease (COPD)
    - Tracheal obstruction, intrinsic/extrinsic
- Lung parenchymal/pleural pathology
    - Adult respiratory distress syndrome
    - Diffuse primary or metastatic cancer to lung or pleura
    - Pleural effusion, malignant/other
    - Pneumonia
    - Pneumothorax
    - Adverse drug reaction
    - Radiation pneumonitis
- Cardiac disease
    - Arrhythmia
    - Chronic heart failure (CHF)
    - Pericardial effusion, malignant/other
    - Valvular disease
- Chest wall/respiratory muscle pathology
    - Ascites

    - Hyperventilation syndrome
    - Malnutrition
    - Primary neurological diseases (e.g., amyotrophic lateral sclerosis)
- Vascular pathology
    - Pulmonary embolus
    - Pulmonary hypertension
    - Pulmonary vascular tumor emboli
    - Superior vena cava syndrome
- Toxic/Metabolic
    - Anaphylaxis
    - Metabolic acidosis
- Other
    - Anemia
    - Anxiety

Assessment

The first step in treating dyspnea is proper assessment of symptoms. Dyspnea is often underrecognized in hospital settings, especially at end of life.

For patients who can self-report – dyspnea is a subjective symptom. As such, the most reliable assessment is to rely on patient's report. This is more reliable than looking for signs of respiratory distress (heart rate, respiratory rate, labored breathing etc.). In advanced disease, dyspnea may not be totally relieved. Assessment tools like the Numerical Rating Scale, Borg Scale, Visual Analog Scale, and The Edmonton Symptom Assessment System can be used to evaluate response to treatment.

For patients who cannot self-report - The Respiratory Distress Observation Scale (RDOS) is a validated tool that can be used to evaluate dyspnea in patients unable to self-report. An RDOS score of 3 or greater indicates uncontrolled respiratory symptoms. This assessment tool can relieve clinician/caregiver distress in treating respiratory distress at end of life.

Specific Treatments

After appropriate assessment, the next step in treating dyspnea is to, when appropriate, treat the underlying cause (e.g., anticoagulation for PE, diuretics for CHF, transfusion for anemia, thoracostomy for pneumothorax, or stenting for endobronchial lesions).

Symptomatic Treatment

Nonpharmacologic Therapy

1. Oxygen - nasal cannula is generally better tolerated than mask, especially in the terminal setting. Oxygen is not always helpful. When focus is on comfort measures, a therapeutic trial may be indicated. This trial should be based on symptomatic relief, not pulse oximetry.

2. Positioning – sitting up, leaning forward

3. Increased air movement – bedside fan, open window

4. Behavioral treatments- Education, pursed-lip breathing, relaxation therapy

5. Noninvasive positive pressure ventilation (NIPPV)- reduces demand on respiratory muscles. This is often uncomfortable. At the end of life, symptom control can be achieved with medications, if that is more in line with patient/family goals.

6. Pulmonary rehabilitation – specifically for chronic dyspnea, has better evidence than long term use of opioids for relief of dyspnea.

Pharmacologic Therapy

1. Opioids – first line medication. Starting dose depends on current or prior opioid use. Oral morphine is most commonly prescribed for dyspnea, but relief of dyspnea is a class effect, and any opioids can be used for this purpose. Opioid selection should be made based on other patient-specific factors including renal function, hepatic function, and prior or current opioid use. Lower doses are generally needed than those used for pain management. Constipation can still be a problematic side effect. Respiratory depression, often cited as a concern about using opioids in this patient population, is much less likely at doses used for dyspnea. For opioid naïve patients with severe dyspnea, but not necessarily at the end of life, consider a trial of oxycodone 2.5mg-5mg every 4 hours PRN. At the end of life, consider starting with morphine 1-3 mg IV or subcutaneous every 1-hour PRN in opioid-naïve patients. If dyspnea is not controlled on this regimen consultation with Palliative Medicine is warranted. Higher doses may be required for patients already on chronic opioids; consider raising current opioid doses by 25%. There is mixed/low-quality evidence for long term opioid use in dyspnea.

2. Anxiolytics (diazepam, lorazepam, midazolam) – particularly helpful when patients experience anxiety, panic or sense of suffocation. They are often used in conjunction

with opioids at end of life. For severe dyspnea, consider lorazepam 1mg PO every 2 hours PRN or diazepam 2-5 mg IV every 2 hours PRN or until symptoms improve. When thinking about chronic dyspnea, consider mortality risk in prescribing both opioids and benzodiazepines. Behavioral interventions listed above likely will improve anxiety induced by dyspnea with less risk than chronic benzodiazepines.

3. Cough suppressants - opioids act centrally as cough suppressants, as does dextromethorphan, which is chemically related to opioids.

4. Steroids - Dexamethasone/prednisone for bronchospasm, SVC syndrome or diffuse parenchymal metastases

5. Sedatives - Sedating major tranquilizers (chlorpromazine) or barbiturates (pentobarbital, phenobarbital) may be needed to control dyspnea or anxiety that cannot be managed with opioids and benzodiazepines. Palliative Medicine should be consulted for intractable dyspnea before considering a sedative medication.

6. Anticholinergic agents – useful when dyspnea is accompanied by large amounts of thin, watery respiratory secretions (oral and lung). Centrally acting agents: scopolamine, chlorpromazine. Peripherally acting agents: glycopyrrolate. (Note: *Centrally acting agents are more sedating and can cause delirium)*

Ethical Considerations

Health professionals and the public often mistakenly equate the use of opioids to ease dyspnea at end of life with euthanasia or medical aid in dying. Ethically, the use of opioids is appropriate as long as the intent is to relieve distress, rather than shorten life. This is known in ethics as the doctrine of double effect. In addition, there is no evidence that reasonable and proper use of opioids and anxiolytics results in hastened death at the end of life. Understanding the patient's wishes for end-of-life symptom control and providing good communication with family and other caregivers (e.g., nursing staff) regarding the use of these medications is essential to avoid misunderstanding. Validated assessment tools for patients who cannot communicate like the RDOS can also be helpful in more objectively treating symptoms at end of life with the most appropriate and adequate amount of opioids and/or anxiolytics.

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Pre/Post Test

Questions

True/False

Read the following statements carefully and identify whether they are **True or False**.

1. Opioids are contraindicated for treatment of dyspnea in patients with chronic lung disease due to risk of respiratory depression.
2. Assessment of dyspnea should rely on subjective patient report over objective measures like RR and O2 saturation.
3. There is no evidence that reasonable use of opioids and anxiolytics at the end-of-life results in hastened death.
4. Constipation is a less concerning side effect with the lower doses of opioids used to treat acute dyspnea.
5. Dyspnea is better recognized and treated than other symptoms at end of life.

Short Answer

1. List two causes of dyspnea that are not related to lung, pleural, or cardiac pathology.
    a. _____
    b. _____
2. List three nondrug treatments for dyspnea
    a. _____
    b. _____
    c. _____

Write a prescription for emergency treatment of severe dyspnea in an opioid-naïve, 50-year-old dying patient using morphine (dose, route and schedule).

Answers

1. False 2. True 3. True 4. False 5. False 6. Anaphylaxis, Metabolic Acidosis, Anemia, Anxiety 7. Oxygen, Positioning, Increased Air movement, Behavioral interventions (e.g., relaxation therapy), Pulmonary Rehabilitation 8. Morphine IV 1-3mg q1h PRN

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Module: Dyspnea

A Management of Dyspnea Case Study | Faculty Guide (three parts)

Objectives

1. Review appropriate assessments of dyspnea.
2. Develop a differential diagnosis for dyspnea.
3. Formulate an initial patient management plan for dyspnea and adjust based on changes in clinical status.
4. Explain ethical implications of dyspnea management.

Part I

Mr. J. has been on the transplantation service for the past four days. He was admitted with end-stage pulmonary fibrosis for evaluation for heart-lung transplant. During the past three weeks, he has experienced increasing dyspnea, prompting this admission. On admission, his respiratory rate was 24 to 32 breaths per minute, his pulse was 110 beats per minute, and the pulse oximetry reading was 89% with 4L nasal canula. An evaluation revealed no reversible causes of dyspnea, and the pulmonary consultant believes the dyspnea is irreversible, caused by progression of his underlying lung disease. The patient was recently determined to not be a candidate for transplantation and subsequently expressed a wish for *Do Not Resuscitate, Do Not Intubate* status. Current treatments for the dyspnea include oxygen by nasal canula and handheld inhalers. The patient is considering going home with the support of home hospice. He asks the team if there is anything else he can do to help with his dyspnea so he can walk far enough on his own to sit out on his porch at home.

Questions

1. What should be included in your evaluation of dyspnea?
2. What tools can you use to assess the severity of dyspnea/response to treatment?
3. Suggest an initial treatment approach; specify nonpharmacologic and pharmacologic orders (include medication, dose, route, and schedule)

Part 2

Mr. J experiences relief with the new regimen prescribed for a few days and has been seen walking the hallways in the hospital. He is waiting on a start of care date from the home hospice agency to be discharged home. On the sixth hospital day, while you are on rounds, a nurse interrupts to tell the team that Mr. J is breathing at a rate of 50 breaths per minute and is very agitated sitting on the edge of the bed gasping for air. He is so short of breath; he does not think he can take any PO medications at the moment. The team goes immediately to see Mr. J. and confirms the aforementioned findings. The resident tells the nurse to check pulse oximetry, increase oxygen to 50% by face mask and call him in 1 hour to report any changes.

Questions

1. What should be included in your assessment of this acute exacerbation of dyspnea?
2. Is the proposed treatment plan appropriate? If not, why?
3. Suggest an alternative treatment approach; specify nonpharmacologic and pharmacologic orders (include medication, dose, route, and schedule) and how to assess dyspnea if patient becomes unable to verbally communicate.

Part 3

A new set of orders is discussed, which includes IV opioids. However, the intern looks very uncomfortable and finally expresses concern saying, "I understand the medical issues here but it still *feels* like we are doing nothing more than performing euthanasia."

Questions

1. How should you respond to this concern? What educational or public policy statements can you use to support the plan of care?

Part I Teaching Points

- An evaluation of dyspnea should always include a broad differential even in patients with known lung disease.
- Assessment tools like the Numerical Rating Scale, Borg Scale, Visual Analog Scale, and The Edmonton Symptom Assessment System can be used to evaluate severity of dyspnea/response to treatment.
- The first step in treating dyspnea is to treat reversible causes. This step has already been completed in this patient. See outline for list of pharmacologic and nonpharmacologic options. Nondrug treatments can include the following
    - Opening a window or bringing in a fan
    - Bedside relaxation techniques
    - Referral to pulmonary rehab for chronic dyspnea/longer prognosis
- An appropriate pharmacologic approach could be oxycodone PO 2.5mg-5mg q4h PRN

- Don't forget to include a bowel regimen with the initiation of any opioid. The risk of respiratory depression is low in the doses used to treat dyspnea. However, constipation remains a potentially problematic and uncomfortable side effect.

Part II Teaching Points

- The need for rapid assessment: This patient cannot wait 1 hour for assessment of the effectiveness of any changes. The assessment must be continuous until the patient is more comfortable.
- A pulse oximeter reading will likely not change the therapeutic strategy in this case—as the goal is to relieve the *symptom,* not to treat an oxygen saturation reading.
- Use of oxygen masks is often very disturbing to patients with severe dyspnea, especially in the terminal setting, where oxygen masks should generally be avoided.
- Clearly a rapid assessment for reversible causes is needed.
    - Is the oxygen working? Is the oxygen tubing kinked?
    - Is there an acute anxiety event in progress?
    - Is there a new increase in pain?
    - Go through the differential for dyspnea again with this acute worsening, keep in mind that some invasive interventions to reverse treatable causes may not be in line with patient's goals at this time.
- Nonpharmacologic treatments can include the following:
    - Increasing Oxygen through nasal cannula as tolerated
    - Positioning- having patient sit up/lean forward
- An appropriate medication order could include: Morphine IV 1-3mg q1h PRN
- If patient's condition progresses and patient is not able to self-report, the Respiratory Distress Observation Scale (RDOS) is a validated tool that can be used to evaluate dyspnea. An RDOS score of 3 or greater indicates uncontrolled respiratory symptoms and could be used as an indication to give a PRN medication for dyspnea.

Part III Teaching Points

The fear of using drug therapy - drugs with potential for respiratory depression - to ease the distress of dyspnea often leads to inadequate symptom control. Health professionals and the public often mistakenly equate the use of medications to ease dyspnea at the end of life with euthanasia or medical aid in dying. Ethically, the use of these medications is appropriate, as long as the intent is to relieve distress, rather than shorten life. **Note: As long as patient or proxy agrees to therapy, there is no justification for withholding symptomatic treatment to a dying patient out of fear of potential respiratory depression. Furthermore, it should also be pointed out that there is no evidence that reasonable and proper use of such medications (opioids, anxiolytics) results in patients at the end of life dying sooner. This is also particularly true with lower doses of opioids effective in treating dyspnea compared to doses used for pain management.** All major U.S. medical, ethical, and religious organizations recognize the

imperative to treat distressing symptoms in dying patients. All of these organizations recognize and accept the concept of "double effect"—so that if the *intent* is to relieve distressing symptoms (and medications are administered and titrated in keeping with reasonable standards of care) - and the patient dies - this course of action is considered good medical care, not euthanasia. In contrast, euthanasia is defined as the *intent* to end a patient's life through an active means. Although this definition seems like a fine distinction, the key concept and distinctions are the physician's intent. Euthanasia, where the medication is administered by a healthcare professional is illegal in the United States. Medical Aid in Dying is the process by which a healthcare provider prescribes a medication that a patient with full capacity self-administers; this is legal in some states. Understanding the patient's wishes for end-of-life symptom control and good communication with family and other caregivers (e.g., nursing staff) regarding how and why medications to relieve distressing dyspnea are administered is essential to avoid misunderstanding. This is also where a more objective rating scale such as RDOS, which can be used to give parameters for giving PRN medications when patients cannot self-report symptoms, can be helpful. This shared understanding, the intention to relieve symptoms, not hasten death, should be documented.