RESPIRATORY FAILURE AND DYSPNEA: NOT A SINGLE ENTITY

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Dr. Shalini Nayar, MD, FRCP
Internal Medicine, Respiratory Medicine, Palliative Care

Clinical Assistant Professor
Division of GIM
Associate member, Division of Palliative Medicine
Department of Medicine, University of British Columbia
Disclosure

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• No Conflict of Interest
• No extra money (sadly... )
Objectives

• Emphasize the difference between respiratory failure and dyspnea

• Review cases and management strategies for Lung CA and COPD patients

• Discuss challenges related to chronic ventilator withdrawal

• Identify future needs and address questions
ARE DYSPNEA AND RESPIRATORY FAILURE THE SAME?
Respiratory Failure and Dyspnea

• NO... they can be mutually exclusive... or not

• **Respiratory Failure:**
  • The loss of the ability to ventilate/provide sufficient oxygen to the blood and systemic organs. Oxygenation or CO$_2$ elimination is poor.
    • **Type 1 (Hypoxemic)** - PO$_2$ < 50 mmHg on room air. These disorders interfere with the lung's ability to oxygenate blood. Eg. CHF, ALI.
    • **Type 2 (Hypercapnic/ Ventilatory)** - PCO$_2$ > 50 mmHg (if not a chronic CO$_2$ retainer). Eg. Obstruction, NMD, central, decreased drive.

• **Dyspnea:**
  • A *subjective* feeling of breathing discomfort
  • Symptom in 50% pts in acute care hospitals, 25% ambulatory setting
Control of respiration.

Recognition of palliative care - Evolution

- Lung diseases can be incurable but fully treatable
  - Always sort of recognized

- Main areas that have been studied:
  - Qualitative vs. Quantitative studies
  - Lung CA, COPD, Pulmonary fibrosis, CHF
  - CF, other ILD, pHTN – recognized but not strong individual recommendations

- Guidelines:
  - CHEST (lung Ca) 2003 – Directives (EOL) and palliation
  - ATS 2007 – all lung diseases, not individualized
Symptoms

- Most core symptoms are generalizable
- Some evidence for individual disease states and morbidity
- Common:
  - Dyspnea - disease state
  - Pain
  - Anxiety
  - Side effects of meds
  - Infection
  - Existential suffering
Trajectories of decline.

The three main trajectories of decline at the end of life

- Cancer
- Organ failure
- Physical and cognitive frailty

Case 1: Ms. Malignante

- 52 year female with newly diagnosed NSCLC. Previously healthy, non-smoker and positive family history. Presents to ER with increased SOB and chest pain. SaO2: 95% rm air.

- Why is she SOB (acute? Related to her cancer?)
- Is the underlying etiology reversible?
- What needs to be done acutely?
- What symptoms can we treat acutely?
- What is her long term trajectory?
- When can we introduce ACP?
Ms. Malignante

- Things to consider:
  - Current situation
    - How much investigation is needed?
  - New diagnosis of metastatic cancer
    - Treatments she may get/treatment that can be helpful (eg. chemo, XRT)
    - Other symptoms: depression, anxiety
  - Symptom management
    - She had a pleural effusion
    - Drained with thoracentesis with symptom resolution
      - Pigtail? PleurX? Repeat drainage? Pleurodesis?
Lung Cancer

- **Morbidity:** dyspnea, pain (++), existential suffering, depression, anxiety, chemo/XRT side effects, cough, hemoptysis

- May be complex pain depending on metastases – pleura, pericardium, bone, liver, brain

- Early advanced care directives necessary
  - Prognostication, palliative benefits, home DNR

- Consider: palliative interventional techniques, pleurX insertion – if pt is not appropriate, manage the dyspnea with meds
Cohort of 151 newly diagnosed NSCLC patients randomly assigned to palliative care + med onc or med onc alone (2008 study)
- assessed QOL, mood, survival at 12 wks (primary endpoint of QOL change)
- Tools: Depression scale, anxiety scale, FACT - L
Case 2- Mr. Sloflo

- 65 y.o. male in clinic with increased pain L chest wall, severe dyspnea, decreased fxn over 2 months
- Now in wheelchair

- PmHx includes severe COPD (FEV1< 1L, 30%), CAD, current PPD smoker

- Wife concerned about finances and uncertain of his trajectory
Issues

• Pain
  • Pain meds?
  • Pain association with dyspnea?
  • Where is it coming from?

• Dyspnea
  • Strategies for management?
  • Differential?
  • Prognostics?
  • Advance Care Planning

• Social
  • Personal care
  • Finances
  • Mood disorders (cancer and COPD – at increased risk!)
Copd

- Morbidity:
  - Dyspnea,
  - depression (up to 50% in studies)
  - anxiety (similar to dyspnea)
  - pain (chest pain, chronic full body pain)
  - repeat infectious exacerbations, repeat hospitalization
  - multiple co-morbidities
  - smoking status

- Debilitating – unpredictable disease trajectory
- Pulmonary rehab
- Opioids
- The O2 story – LTOT criteria
Morbidity and Mortality

- National Hospice and Palliative Care organization states that end-stage COPD is suspected in:

- Disabling dyspnea at rest (In US: corresponding FEV1<30%)
- Poor/no response to bronchodilators
- Bed-to-chair existence
- Repeat hospitalizations (NOT quantified)
- Hypoxemia at rest
- Hypercapnea (PCO2>50)
- RHF from pulmonary cause
- Unintentional, progressive wt loss (>10% over 6 months)
- Resting tachycardia (>100 bpm)
Morbidity and Mortality

### BODE Index Scoring

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<thead>
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<th>Variable</th>
<th>Points</th>
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<tr>
<td>Variable</td>
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<tr>
<td>FEV₁ (% predicted)</td>
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<tr>
<td>Walk distance in 6 min (m)</td>
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<td>MMRC dyspnea scale</td>
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<tr>
<td>Body mass index</td>
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Note: Many studies done looking at other variables: co-morbidities, functional capacity alone, rate of decline in FEV₁ (> 40 ml/yr) as well.

- 25% die within 1-yr of acute hospitalization

- Median survival after ICU visit acutely = 2 yrs, with 50% likelihood of repeat hospitalization in 6 months

<table>
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<tr>
<th>Bode score</th>
<th>1-yr Mortality (%)</th>
<th>2-yr Mortality (%)</th>
<th>3-yr Mortality (%)</th>
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<tr>
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<td>7-10</td>
<td>5</td>
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</table>
Mr. Sloflo

• Used opioids for dyspnea-some relief
• Homecare CHN
• BC Palliative benefits – His PPS when seen: 40% and decreasing
• Community DNR
• Home OT
• Qualified for O2 – used nocturnal (thoughts?)
• Home Hospice Program social work involvement
• Admitted to hospital 2 X after first seen
• Palliative care consult at each admission
• Passed away on his second admission, 2 months after first seen (transferred to PCU for dyspnea mgmt at EOL)
• He never quit smoking, did not keep education appointments
• For his wife: bereavement follow up (by PCU and Home Hospice)
Dyspnea Management

- Non-pharmacologic strategies:
  - Cochrane review 2011
    - NMES, CWV - good
    - Walking aids, breathing training - good
    - Relaxation, fan, psychotherapy, combinations – need further data
    - Accupuncture – mixed results
  - Interventional procedures where appropriate
  - Ventilation
  - Fresh Air
    - Cool temperature
  - Energy Conservation
  - Position
    - Ease of abdomen/chest movements
  - Environment
    - Claustrophobia, humidification
Dyspnea Management

• Pharmacologic strategies:
  • Compliance and inhaler technique, switch to nebs?
  • Opioids
  • Oxygen vs. Fan
  • Steroids – underlying causes
  • Adjuvant medications:
    • Anxiolytics
    • Antidepressants
    • Neuroleptics (Methotrimeprazine, Chlorpromazine)
Opioids

- Studied extensively

- Oral and parenteral opioids for palliation of end-stage diseases useful in Cochrane review (currently being reviewed again) and individual studies

- Nebulised opioids equivocal, not used regularly

- Start very low and slow
Opioids

- They are pretty safe
  - No evidence to suggest that responsible use causes respiratory compromise (O2 saturations, gas exchange abnormality)

- Start low and go slow
- Short-acting, to start
- Think of side effects (elderly, frail, organ dysfunction)
- Opioid naive: lowest doses (titrate), PRN vs. Q4h
- On opioids: increase the dose overall vs. Increase PRN
  - 25-50% reasonable and common, may need more

*Do not allow suffering.*
Case 3 - Mr. Hyper-Cap

- 69 yo male
- ALS, trached (planned, not emergent)
- chronic ventilator for 6 years (A/C home vent)
- Multiple PNA, UTI
- Blinking only communication
- Previously worked as an accountant
- Choosing for d/c ventilation because of yet another episode of urosepsis
- ISSUES:
  - Immediate
  - During the d/c
ALS

- Life expectancy is typically 2-5 years while some die sooner and other live much longer, i.e., 20% over 5 years and 10% over 10 years
  - ALS Society of Canada

- Most frightening symptoms to patients: Breathlessness and “choking” on secretions
- Pts may choose ventilation or not
  - Hypercapneic without it

- May stress to patients that a “choking” death would be VERY rare

- Recommendations currently support the use of opioids, anticholinergics and benzodiazepines (anxiety)
ALS

- Complete respiratory insufficiency due to neuromuscular disease, but with the central respiratory drive intact, so the sensation of air hunger is preserved.

- Absence of simple and reliable indicators of distress, ie, the patient cannot grimace or otherwise indicate distress.

- Monitoring pulse would not be reliable due to the tachycardic response to both hypoxia and any premedications (eg. scopolamine given to minimize secretions)

- Issues?
  - Medical
  - Legal
  - Ethical

- Medications to use??
Ventilatory Support - Withdrawal

- Medical
  - Timing
  - Symptoms
  - Where the ventilator can be discontinued (ICU vs. PCU)

- Legal
  - Documentation
  - Informed consent

- Ethical
  - Autonomy
  - Do no harm
Summary

- Assess the patient
  - History, investigations
  - Severity
  - Fears

- Look for a treatable cause

- Palliation of symptoms
  - Opioids/adjuvants
  - Anxiety?
  - Oxygen?
  - Non-pharmacologic approach

- Supports
  - Home care
  - Pulmonary Rehab (eg. COPD)
  - Walking aids (OT)

- Re-assess for increasing treatments over course of the illness
  - Need for parenteral drugs
  - Need for hospitalization
  - Changes in goals of care
  - Increased or Palliative sedation?
Treating the Underlying Cause

- **Tumour:** XRT, chemo
- **Airflow obstruction:** Steroids/bronchodilators/stents
- **Pleural procedures**
- **Pulmonary edema:** diuretics
- **Transfusions**
- **Cough:** Anti-tussive, include opioids
- **Secretions:** anticholinergics/saline/NA
- **ILD:** disease-modifying tx, opioids, steroids
- **Lymphangitic CA:** steroids, opioids
- **Other cardiac:** HR meds, anti-anginals
- **Pain:** interventional/meds
References and Resources


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• Estfan, E et al. Palliat Med. 2007;21(2):81-6


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• Paul A. Kvale, Michael Simoff and Udaya B. S. Prakash: http://chestjournal.chestpubs.org/content/123/1_suppl/284S.full.html and http://chestjournal.chestpubs.org/content/123/1_suppl/312S.full.html - Chest Palliative care in Lung cancer

• American Lung Association: http://www.lungusa.org/