Management of Dyspnoea in Palliative Care

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Dyspnoea

• An subjective experience of breathing discomfort

• Derived from interaction among physiological, psychological, social & environmental factors

• May induce secondary physiological & behavioural responses

   – American Thoracic Society
Dyspnoea - prevalence

• 54% of all patients with cancer
• 70% of cancer patients in the last 6 weeks of life
• 90% of patients with lung cancer
• 61% of patients with cardiac disease
  (Regional study of care for the dying (RSCD) Addington-Hall et al 1995)
• 70% of patients with chronic non-malignant lung disease
  (Edmonds and Karlsen 2001)
Causes of Breathlessness

- Lung tumour
- Infection
- Pleural effusion
- Pulmonary oedema
- Bronchospasm
- Lymphangitis
- Pulmonary embolism
- Airway obstruction

- Superior vena cava obstruction
- Radiotherapy induced fibrosis
- Restrictive chest wall tumours
- Anaemia
- Muscle weakness
- Ascites
- Anxiety
- Fatigue
Pathophysiology of dyspnoea

• Chemoreceptors
  – Central: medulla & pons, sensitive to $pCO_2$, pH
  – Peripheral: carotid & aortic bodies, sensitive to $pO_2$

• Mechanoreceptors
  – Stretch receptors in chest wall, airways & lungs

• Afferent mismatch
  – Length – tension inappropriateness

• Sensation of fatigue
Panic and anxiety

- Breathlessness
- Fear of dying
- Lack of understanding
- Increased anxiety

Panic
Spiral of disability

Diseases, e.g. COPD

Breathlessness

Excess Lactate / CO₂ Production

Inactivity

Muscle Deconditioning

Leg Fatigue

Leg Weakness

Social exclusion
Management of Breathlessness

General principles

- Treat underlying cause
- Disease specific treatments, such as chemotherapy or radiotherapy may be of benefit on a palliative basis
- Explanation & reassurance
- Ventilatory support (NIPPV, CPAP) poorly tolerated in palliative population and unlikely to offer significant symptomatic improvement
Management of Breathlessness
Non-pharmacological techniques

• Position
• Relaxation – massage, aromatherapy
• Cool air, fan
• Acupuncture, acupressure
• Pulmonary rehabilitation
  – Breathing exercises
  – Reducing anxiety & panic
  – Adjusting behaviour; pacing, prioritising, conserving energy
Management: treatable causes

Malignant pericardial and pleural effusion

Bronchial stents in patient with obstructive lesion
Handheld fans for dyspnoea relief in COPD: Physical properties and patient perceptions


**Methods**
- n = 33 Male 20
- Age mean 8.7 SD 8.9 years
- COPD
- Random trial of 5 different fans
- NRS (0-10) breathlessness: airflow, pleasantness, noise and ease of use.
- Ranked; 5 = best 1 = worst
- Sound intensity (dB meter) and airflow (anemometer at 15cm from fan)

**Results**
1. Fan 5 highest score
2. Fan 3 lowest score
3. Patient preference: increased intensity and pleasantness of airflow and reduced noise.
Walking aids: rollator
Non-pharmacological interventions for breathlessness in advanced stages of disease

**High strength of evidence**
- neuro-muscular electrical stimulation
- chest wall vibration

**Moderate strength**
- walking aids
- breathing training

**Low strength**
- acupuncture/acupressure

**Not enough data to judge the evidence**
- distractive auditory stimuli (music)
- relaxation
- fan
- counselling and support
- counselling and support with breathing-relaxation training
- case management and psychotherapy

Studies predominantly in COPD (35/47), only 5/47 in cancer

Chest wall vibration
Pulmonary Rehabilitation

• Pulmonary rehabilitation relieves dyspnoea and fatigue, improves emotional function and enhances the sense of control that individuals have over their condition.

• These improvements are moderately large and clinically significant.

• Rehab serves as an important component of the management of COPD and is beneficial in improving health-related quality of life and exercise capacity.

Cochrane Database of Systematic Reviews: Pulmonary rehabilitation for chronic obstructive pulmonary disease 2015
Deep/Diaphragmatic breathing

- **STEP ONE**: Relax. Start by relaxing your shoulders. Try sitting comfortably in an easy chair.
- **STEP TWO**: Place your hands lightly on your abdomen.
- **STEP THREE**: Breathe in slowly through your nose. You want to feel your abdomen rise out under your hands.
- **STEP FOUR**: Breathe out slowly through your mouth. Your abdomen should fall inward.
Management of Breathlessness

**Oxygen**

- Can help with breathlessness & confusion
- Hypoxia may directly trigger the sensation of dyspnoea
- Hypoxic drive starts with PaO2 < 8kPa (SaO2 90%) – most cancer patients will not benefit from O2
- Need to avoid unnecessary dependence on O2
- Caution with patients with hypercapnic ventilatory failure who are dependent upon hypoxia for their respiratory drive
Effect of palliative oxygen versus room air in relief of breathlessness in patients with refractory dyspnoea: a double-blind, randomised controlled trial

- Oxygen does not provide additional symptomatic relief in refractory breathlessness
- Benefit after 24h (air flow past nose)
  - Response rate 42%
- No significant difference between O2 and air
- Moving gas across nasal passages via nasal specs can improve dyspnoea but the gas need not be O2
- Better response in severe breathlessness

Abernethy A et al. (2010). Lancet; 376:784-793
Abernethy et al 2010

• Randomized controlled trial on patients with advanced disease: oxygen 2L/min versus air via a concentrator for 15 hours of the day

• Inclusion criteria:
  – Over 18 years
  – paO2 > 7.3 kPa
  – Refractory dyspnoea related to life limiting illness
  – Maximum treatment for underlying disease
  – Dyspnoea at rest or minimal exertion
Management of Breathlessness

**Bronchodilators**

- Can relieve airflow obstruction even when no wheeze is clinically apparent
- Combination of salbutamol & ipratropium bromide on prn basis
- Theophylline can be effective
Management of Breathlessness

Corticosteroids

• These can reduce dyspnoea with:
  – oedema associated with tumour
  – stridor due to tracheal obstruction
  – lymphangitis carcinomatosis
  – superior vena cava obstruction

• Dexamethasone 4 – 8mg od po for 1 week, then review and stop if not effective
Management of Breathlessness

**Opioids**

- Reduce central perception of breathlessness
- Slows respiration
- Reduce associated anxiety
- Improve cardiovascular function
- Reduce oxygen consumption
- Reduce sensitivity to hypercapnia
Jennings 2001 (SysRev)
- Good evidence for **oral** and **parenteral** opioids
- **No** evidence for **nebulised** opioids
  - 18 studies include (9/9) = 293 patients
- 14 COPD – 2 cancer – 2 other

Currow et al 2014/Ekstrom et al 2014
- In COPD: lower dose opioids not associated with increased admissions or deaths in patients
- ? Safe for symptom reduction
- 30mg morphine/day highest dose range study
Management of Breathlessness

Opioids

• Dose: little data, but start low & titrate
• Formulation: sustained release may be as effective as short acting
  – Abernethy et al, BMJ 2003; 327
• Suggest start MR morphine sulphate 5mg bd
• Side effects: no evidence for respiratory depression
There is some low quality evidence that shows benefit for the use of oral or parenteral opioids to palliate breathlessness, although the number of included participants was small.

We found no evidence to support the use of nebulised opioids.

Further research with larger numbers of participants, using standardised protocols and with quality of life measures included, is needed.
Management of Breathlessness

Anxiolytics

- Little evidence to support use of benzodiazepines
- Can reduce anxiety / panic and associated hyperventilation
- Short acting benzodiazepines such as lorazepam 0.5 – 1mg sublingual prn midazolam 2.5 – 5mg subcut prn
- Buspirone, a non-sedating anxiolytic, has been used but was not clearly effective in trials
Meta-analyses of benzodiazepines

**Meta-analyses of benzodiazepines**

- No evidence for a beneficial effect in pts with cancer or COPD
- No difference regarding type of drug, dose, mode and frequency of administration and duration of treatment
- A treatment trial as 2nd or 3rd line modality is justified in patients where opioids and non-pharmacological measures have failed

Simon et al, Cochrane Review, 2010
Management of Breathlessness

Other drugs

• Cannabinoids – nabilone is an anxiolytic, bronchodilator and respiratory stimulant activity.

• Heliox – 80% helium & 20% oxygen mix, can be effective in upper airway obstruction as it is less dense than air.
Management of Breathlessness

Summary

• Identify & treat underlying cause
• Consider disease specific treatments, such as chemotherapy or radiotherapy
• Explanation & reassurance
• Consider non-pharmacological measures
• Oxygen not appropriate for all
• Evidence to support use of MR opioid
• Lack of evidence to support benzos (but can be useful for panic)
The GSF Prognostic Indicator Guidance
The National GSF Centre’s guidance for clinicians to support earlier recognition of patients nearing the end of life

Three triggers that suggest that patients are nearing the end of life are:

1. The Surprise Question: ‘Would you be surprised if this patient were to die in the next few months, weeks, days’?
2. General indicators of decline - deterioration, increasing need or choice for no further active care.
3. Specific clinical indicators related to certain conditions.

Typical Case Histories

1) Mrs A - A 69 year old woman with cancer of the lung and known liver secondaries, with increasing breathlessness, fatigue and decreasing mobility. Concern about other metastases. Likely rapid decline

2) Mr B - An 84 year old man with heart failure and increasing breathlessness who finds activity increasingly difficult. He had 2 recent crisis hospital admissions and is worried about further admissions and coping alone in future. Decreasing recovery and likely erratic decline

3) Mrs C – A 91 year old lady with COPD, heart failure, osteoarthritis, and increasing signs of dementia, who lives in a care home. Following a fall, she grows less active, eats less, becomes easily confused and has repeated infections. She appears to be ‘skating on thin ice’. Difficult to predict but likely slow decline
b) Organ Failure – erratic decline

**Chronic Obstructive Pulmonary Disease (COPD)**

At least two of the indicators below:

- Disease assessed to be severe (e.g. FEV1 <30% predicted)
- Recurrent hospital admissions (at least 3 in last 12 months due to COPD)
- Fulfils long term oxygen therapy criteria
- MRC grade 4/5 – shortness of breath after 100 metres on the level or confined to house
- Signs and symptoms of right heart failure
- Combination of other factors – i.e. anorexia, previous ITU/NIV resistant organisms
- More than 6 weeks of systemic steroids for COPD in preceding 6 months.
Case study: L

- 44 year old lady with lung adenocarcinoma, diagnosed January 2018 – liver & bone mets
- Asthma since age 6
- Mild bronchiectasis diagnosed in 2014
- Presented with SOB & chest wall pain
- Found to have significant pleural effusion
  - 2L fluid drained – cytology confirmed adenocarcinoma
- Guy’s: VATS & indwelling pleural drain
- Oncology: palliative chemotherapy, crizotinib/ceritinib
Case study: L

• March 2018: hospital admission with chest infection
• May 2018: presented with multiple PEs
  – started on LMW heparin
• July 2018: further pneumonia
• CPCT referral – help managing SOB & pain
  – Titrating opioid
  – Domiciliary O2
  – prn lorazepam sublingual 0.5mg
  – Steroid titration
Case study: L – hospice admission

• 13.09.19 – collapse at home, weakness, SOB
• Decision to admit to hospice for SC
• CT: psoas haemorrhage – LMWH held
• Bloods: Hb 54 – transfusion 3 units
• Ongoing cough – oral Abx, steroids
• Significant anxiety / emotional distress
• Opioid titration for SOB & pain
• Syringe driver started – died 25.09.19