Respiratory Symptoms management and pediatric palliative care

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Case Presentation

پسر 12 ساله مبتلا به استئوسارکوم متاستاتیک با درگیری ریه ها، به دلیل بروز ناگهانی آبریزش بینی،سرفه همراه با تنگی نفس و کاهش اشباع اکسیژن در بخش انکولوژی بستری شد. در بدو بستری در بخش، با دریافت اکسیژن O2Sat افزایش یافت، اما در بهبود تنگی نفس موثر نبود. بر این اساس، مورفین با دوز 25 میکروگرم بر کیلوگرم بصورت تدریجی آغاز شد و

بهبود نسبی در تنگی نفس حاصل شد. پس از مشورت با تیم تسکینی، این تصور که مؤلفه اضطراب بصورت قابل توجهی وجود دارد ومیدازولام با احتیاط به رژیم درمانی او اضافه شد. با این حال، هیچ فایده ای نشان داده نشد و درمان با میدازولام بر این اساس قطع شد. اکسیژن نازال با حجم بالادریافت نمود ولی پس از سه روز، وضعیت تنفسی بیمار بدتر شد. در سمع ریه ها کاهش صدا در قواعد هر دو ریه داشت. در CXR انجام شده، پلورال افیوژن دوطرفه داشت.پس از مشورت مجدد با تیم مراقبتهای تسکینی، تصمیم به پاراسنتز دوطرفه گرفته شد و در کاهش دیسترس تنفسی نقش بسزایی داشت.

Epidemiology

- Respiratory symptoms occur in 30–80% of children with advanced cancer.
- These symptoms are distressing and have long-term impact especially for the parents.
- The management of any symptom should include a holistic approach that takes into consideration the interaction of physical, psychological, social, and spiritual factors.

Dyspnea

Dyspnea is one of the most distressing and frightening symptoms experienced by children and witnessed by parents

Definition

- Dyspnea is the term for the sensation of breathlessness (air hunger).
- *Dyspnoea is subjective;*
- In approximately 48% of children, the dyspnea is associated with “a lot” or “a great deal” of suffering.

Causes

These include:

- physical factors (fluid, tumour, weakness, injury);
- psychosocial factors (fears about function, inability to carry out normal tasks such as walking or feeding);
- existential or spiritual (interference with respiratory function carries implication of imminent death, fear of suffocation).

Causes of respiratory symptoms in paediatric palliative care

Cause	Dyspnoea	Cough	Haemoptysis	Tachycardia	Retained secretions
Infection	✓	✓	✓		✓
Anaemia	✓				
Pain	✓			✓	
Anxiety	✓				
Respiratory muscle weakness	✓	✓			✓
Cardiac failure	✓	✓		✓	
Arrhythmia	✓			✓	
Cyanotic heart disease	✓		✓		
Plastic bronchitis (in single ventricle heart disease)	✓				✓
Pulmonary oedema	✓	✓	✓		
Pleural or pericardial effusion	✓	✓			
Pneumothorax	✓				
Tumour mass	✓	✓	✓		✓
Superior vena cava obstruction	✓	✓			
Aspiration	✓	✓			
Reflux		✓			
Impaired ability to swallow		✓			✓
Abnormalities of clotting, (e.g. haematological malignancy)			✓		

Management

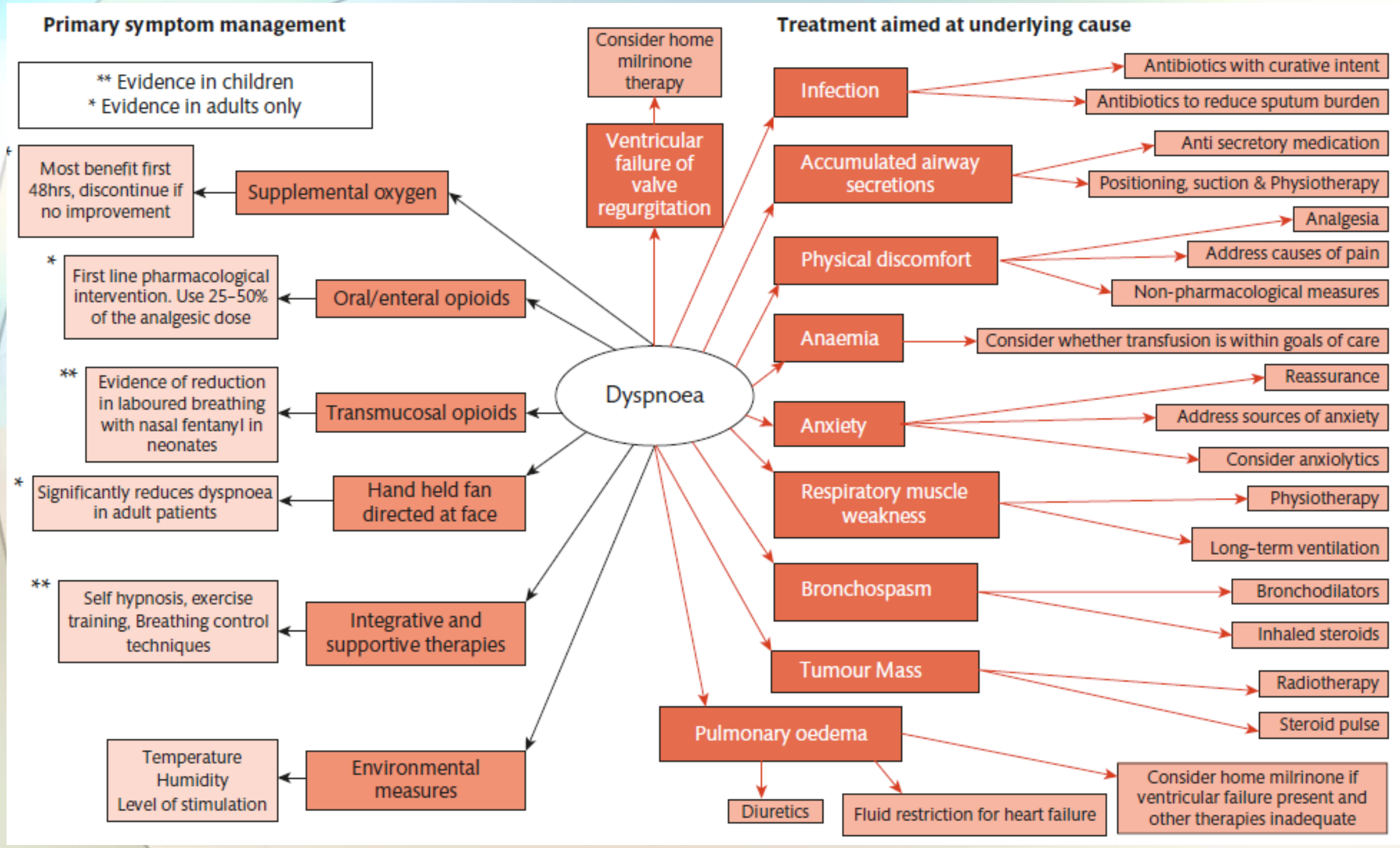
Management

- modifying an underlying cause
- Targeting the subjective sensation of breathlessness

management strategy for dyspnoea

it is important to consider:

- subjective symptoms, as well as objective signs;
- non- pharmacological, as well as pharmacological, approaches;
- psychological, as well as physical, interventions.


Primary symptom management
** Evidence in children
* Evidence in adults only
Dyspnoea
Supplemental oxygen
Most benefit first 48hrs, discontinue if no improvement
Oral/enteral opioids
First line pharmacological intervention. Use 25–50% of the analgesic dose
Transmucosal opioids
Evidence of reduction in laboured breathing with nasal fentanyl in neonates
Hand held fan directed at face
Significantly reduces dyspnoea in adult patients
Integrative and supportive therapies
Self hypnosis, exercise training, Breathing control techniques
Environmental measures
Temperature
Humidity
Level of stimulation
Consider home milrinone therapy
Ventricular failure of valve regurgitation
Treatment aimed at underlying cause
Infection
Antibiotics with curative intent
Antibiotics to reduce sputum burden
Accumulated airway secretions
Anti secretory medication
Positioning, suction & Physiotherapy
Physical discomfort
Analgesia
Address causes of pain
Non-pharmacological measures
Anaemia
Consider whether transfusion is within goals of care
Anxiety
Reassurance
Address sources of anxiety
Consider anxiolytics
Respiratory muscle weakness
Physiotherapy
Long-term ventilation
Bronchospasm
Bronchodilators
Inhaled steroids
Tumour Mass
Radiotherapy
Steroid pulse
Pulmonary oedema
Diuretics
Fluid restriction for heart failure
Consider home milrinone if ventricular failure present and other therapies inadequate

Steps in managing dyspnoea

1. Consider the possibility of dyspnoea, and proactively ask about it.
2. in discussion with the child, whether breathing problems are a concern to himself or herself.
3. explore meaning of breathing difficulties for child and family.
4. Take a careful history of the nature of the symptom.
5. Perform a careful examination.
6. Make a rational diagnosis of the cause(s) for dyspnoea.
7. Construct a rational therapeutic approach, weighing each intervention carefully, with respect to the potential good it may do and the potential harm.
8. review the effectiveness of the intervention.

Oxygen

- Studies on the benefits of supplemental oxygen therapy have failed to show a consistent benefit over room air.
- Adult studies have failed to show a consistent benefit of oxygen.
- Oxygen does not relieve dyspnoea in the absence of hypoxaemia.
- Need for oxygen in the palliative phase should be considered very carefully for the individual child and family.
- oxygen should be offered but discontinued if there is no apparent symptomatic benefit within the first 48 h.

Opioids

- Opioids relieve the distress of breathlessness in patients, without a measurable effect on their respiratory rate or blood gases.
- There are opioid receptors in the respiratory and cough centers of brain.
- opioids reduce air hunger and ventilatory response to decreasing oxygen and rising carbon dioxide, as well as reducing anxiety
- Respiratory depression, significant sedation, or other adverse effects were not encountered at these low doses.
- **Dose in pediatrics:** is to prescribe opioids for dyspnoea at 30–50% of the dose that would be used for pain management (in opioid-naive children).
- **For patients already established on opioids for pain management**: increase the dose by 25%

Opioids

- For children with chronic dyspnoea, **long-acting opioids** should be considered.
- **Fast-acting opioids** can be helpful as anxiety can escalate, exacerbating dyspnoea, while waiting for medications to be effective.
- **Nebulized opioids:** there is no good evidence for their use and increase risk of bronchospasm.

Anxiolytics

The close interrelationship between dyspnea and anxiety suggests a role for anxiolytics.

Benzodiazepines

- Benzodiazepines act on receptors in higher centres to relieve anxiety, and on receptors in the respiratory centre.
- May be second- or third- line treatment when non-pharmacological measures or opioids have failed to adequately control symptoms.
- **Long- acting benzodiazepines**: lorazepam and diazepam, can be useful for background dyspnoea.
- **Short- acting benzodiazepines:** Buccal or parenteral midazolam is particularly useful for acute episodes of dyspnoea or panic attacks.
- Intranasal midazolam may be more acceptable to children than the buccal route

Diuretics

- There is clearly a role for diuretics in children with fluid retention and dyspnoea associated with pulmonary oedema but evidence of benefit in the absence of pulmonary oedema is lacking.
- Inhaled furosemide: benefits in cancer is unclear.

Nebulized saline

- Some patients derive benefit from nebulized saline.
- The mechanism is not clear but may be a combination of dilution of viscid secretions and the effect of blowing on the face.

Specific interventions in malignant disease

- Interventions directed at reducing tumour mass:
  - palliative chemotherapy,
  - short courses of high dose steroids, such as dexamethasone,
  - radiotherapy
- Drainage of pericardial and pleural effusions

Integrative and supportive therapies

- Psychosocial support for anxiety associated with dyspnea
- self-hypnosis
- acupuncture

Non-pharmacological management

- Use a hand-held fan towards the face
- Cooling and open space (open windows, air conditioner)
- Loose and comfortable clothing
- Positioning (usually child will choose most comfortable position)
- Breathing techniques (deep breathing, pursed-lip breathing, abdominal breathing)
- Relaxation and distraction (music, art, play, massage) for anxiety management
- Chest physiotherapy (percussion, vibration and postural drainage).
- Encourage cough (staggered breathing technique) for patients with neuromuscular disorders.
- Calm approach to patient and family

RETAINED SECRETIONS AT THE END OF LIFE (death rattle)

- As consciousness deteriorates and the ability to swallow weakens, secretions accumulate in the upper airway causing noisy breath sounds.
- this is not usually distressing for the child but can be considerably distressing for family members.
- There is currently no evidence to show that any intervention, pharmacological or nonpharmacological, is more effective than placebo.

Symptomatic management of retained secretions

- Simple measures such as repositioning and postural drainage should be initiated and suctioning, although only of short-term benefit, may also be helpful.
- Anticholinergic drugs, usually hyoscine hydrobromide may be used
- Glycopyrronium may be superior to hyoscine hydrobromide in the reduction of noisy breathing.
- Octreotide: No evidence that octreotide is better than placebo or anticholinergics


THANKS FOR YOUR ATTENTION