

Palliative Medicine Doctors Meeting

Cough in Cancer Patients

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Cough is probably among one of the commonest complaint encountered by most doctors. In the cancer population, cough is a symptom in up to 37%^{1,2,3}, but in lung cancer, cough is more severe with a reported incidence up to 86%^{4,5,6}. Unlike pain, cough is not a symptom that is being measured regularly in terminal cancer patients. Because of the intermittent nature of the symptom, it may not draw the attention it deserves.

The significance of cough in palliative care setting

Cough serves to expel mucus, sputum, fluid, and foreign body from the airway. The expulsion is made possible by the high intrathoracic and high airflow velocity generated during the cough reflex⁷. As a result, many complications including rupture, displacement of organs or structures are reported⁷. In order for cough to be effective, the following conditions are required: (1) optimal function of the respiratory muscles (2) closure of the glottis (3) dynamic compression of the major airway (4) favourable mucus properties (5) effective mucociliary clearance⁷. In palliative care, our patients may not be able to generate a forceful cough in the presence of multiple unfavourable factors. (Table 1) However, cough should not be regarded as a trivial symptom. Cough can be a great nuisance and causing great distress by bringing symptoms like exhaustion, sweating, incontinence, insomnia; changes in life style; and lowering of quality of life^{8,9}.

Table 1: Factors decreasing effectiveness of cough in cancer patients
Inhibitors of cough e.g. pain, strong opioid
Cachexia
Steroid myopathy
Neurological conditions causing muscle weakness
Distended abdomen e.g. ascites, hepatomegaly
Vocal cord involvement e.g. head & neck tumour, recurrent laryngeal nerve involvement
Stiffness of major airway e.g. endobronchial tumour, stent insertion
Increase tenacity of mucus e.g. dehydration, hyoscine
Decrease mucociliary clearance e.g. smoking

Clinical approach to cancer patient with cough

In the general population with chronic cough, the commonest specific causes, treatment algorithm, and success rate of treatment have been well documented^{7,10,11}. The principle of giving specific treatment to the identified causes is the key to high success rate in alleviating cough in this group. Although we cannot apply those algorithms to our patients as the underlying causes can be very different¹², there should be little dispute that one should try to give specific treatment for a condition if possible, even when the cancer itself is not curable. However, there is always a dilemma of how far we can go to identify all the underlying mechanisms for cough in cancer without giving the patients too much a burden of investigations.

Based on the above discussion, the following clinical approach to cough in terminal cancer patients is suggested:

1. Identify specific cause or underlying mechanism if possible, including non-malignant causes (Table 2)^{7,10,11,12,13}.
2. Assess the effectiveness of cough, looking for factors that will diminish cough reflex.
3. Assess the impact of cough on patient's physical, social, and psychological well being.
4. Decide on treatment goal and strategy

Table 2: Causes of cough in cancer patients	
Causes	Helpful information/remarks
Pleural disease – effusion, tumour	CXR
Lung parenchyma infiltration	CXR
Chest infection	CXR, sputum culture
Lymphangitis carcinomatosis	CXR*, CT scan
Microembolism	CXR*
Major airway or endobronchial tumour	CXR*, lung function showing truncated flow-volume loop, CT scan
Tracheo-oesophageal fistula	History of repeated aspiration
Vocal cord paralysis	History of hoarseness, aspiration, CXR
Pericardial effusion	Echocardiogram
Post radiation and chemotherapy	Past history
Post nasal drip syndrome (PNDS)	History non-specific, X ray sinus may help
Gastro-oesophageal reflux disease (GERD)	Up to 75% of those present with cough has no GI symptoms, pH study
Asthma	Bedside spirometry
Chronic bronchitis, bronchiectasis	
Angiotensin-converting enzyme inhibitor (ACEI)	History
Eosinophilic bronchitis	Sputum for eosinophil count
Congestive heart failure	Past health and drug history, CXR
Post infectious cough	History
*CXR can be normal in this conditions	

Treating cough in cancer patients

The management options include the following:

1. Treatment of specific condition (Table 3) ^{7,10,11,12,13}
2. Enhance effectiveness of cough if appropriate
3. Suppress cough

Treatment	Condition
Remove irritant	ACEI
Antibiotics	Pneumonia, sinusitis causing PNDS
Steroid	Tracheal/Endobronchial tumour Lymphangitis carcinomatosis Post-irradiation lung damage Asthma Eosinophilic bronchitis PNDS
Paracentesis	Pleural effusion Pericardial effusion
Tumour specific treatment-radiotherapy, laser, cryotherapy	Endobronchial tumour
Bronchodilators	Asthma COPD
Antihistamine	PNDS
Proton pump inhibitor	GERD

Improve effectiveness of cough or expectoration of sputum

In cases when the underlying is potentially reversible, as in some chest infection, this may be beneficial. Many non-drug measures, such as bronchopulmonary hygiene therapy, hydration, suction, have been adopted, though evidence on clinical outcome measures is generally lacking ⁷. Various protussive agents e.g N-acetylcysteine, hypertonic saline, have been used to liquefy the sputum ¹⁴. However, as the volume of sputum will increase with liquefaction, an intact cough reflex is required for clearance.

Drugs for suppressing cough

Various agents, central or peripheral acting, have been used for suppressing cough (Table 4). The most popular group is that of opioids, of which codeine is the prototype. They are likely to act on the central cough centre, and 5HT is involved ^{7,13}. Hydrocodone, a metabolite of codeine, is an alternative, and is associated with less neuropsychological problems and constipation ¹⁵. Dextromethorphan is a centrally acting non-opioid which shares the same advantage as hydrocodone, and proven to be effective in randomised controlled trials ¹³.

Another group of drugs acts on the periphery. Benzonatate ¹⁶ is related to procaine, a local anaesthetic; whereas levodropropizine ¹⁷, sodium cromoglycate ¹⁸, and lignocaine ^{13,19,20} are believed to modulate or inhibit the C-fibre activity. When giving drugs with anaesthetic property, it is advisable to ask the patient to stop oral intake for a minimum of 2 hours afterwards or till the anaesthetic effect wears off.

Table 4: Drugs for suppressing cough

Central acting	
Codeine	15-30mg Q4H PO
Hydrocodone	5-10mg Q4H PO
Dextromethorphan	15-30mg Qid PO
Benzonatate	100-200mg tid PO
Levodropropizine	75mg tid PO
Sodium cromoglycate	2 puffs bid (total 40mg per day)
Lignocaine	5ml 2% lignocaine (100mg) Q4H
Bupivacaine	(nebuliser) 5ml 0.25% (12.5mg) Q4H (nebuliser)

Conclusion

Cough, though as common as it may be, should not be taken lightly as a trivial symptom in cancer patients. With this awareness, one should try as far as possible to identify the specific underlying causes, assess the impact on the patient other than the physical dimension, and offer treatment accordingly. Alleviating the symptom of cough in cancer patients is certainly far more than just giving opioid or selecting a cough syrup randomly.

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