THE NORTHERN HOSPITAL

COUGH

The Russian Flag goes up over the Reichstag, Berlin 2nd May 1945, photographer, Yevgeny Khaldei.

"...A shadow has fallen upon the scenes so lately lighted by the Allied victory. Nobody knows what Soviet Russia and its Communist international organisation intends to do in the immediate future, or what are the limits, if any, to their expansive and proselytising tendencies. I have a strong admiration and regard for the valiant Russian people and for my wartime comrade, Marshal Stalin. There is deep sympathy and goodwill in Britain- and I doubt not here also-towards the peoples of all the Russias and a resolve to persevere through many differences and rebuffs in establishing lasting friendships. We understand the Russian need to be secure on her western frontiers by the removal of all possibility of German aggression. We welcome Russia to her rightful place among the

leading nations of the world. We welcome her flag upon the seas. Above all, we welcome constant, frequent and growing contacts between the Russian people and our own people on both sides of the Atlantic. It is my duty however, for I am sure you would wish me to state the facts as I see them to you, to place before you certain facts about the present position in Europe.

From Stettin in the Baltic to Trieste in the Adriatic, an iron curtain has descended across the Continent. Behind that line lie all the capitals of the ancient states of Central and Eastern Europe. Warsaw, Berlin, Prague, Vienna, Budapest, Belgrade, Bucharest and Sofia, all these famous cities and the populations around them lie in what I must call the Soviet sphere, and all are subject in one form or another, not only to Soviet influence but to a very high and, in many cases, increasing measure of control from Moscow. Athens alone - Greece with its immortal glories - is free to decide its future at an election under British, American and French observation. The Russian-dominated Polish Government has been encouraged to make enormous and wrongful inroads upon Germany, and mass expulsions of millions of Germans on a scale grievous and undreamed-of are now taking place. The Communist parties, which were very small in all these Eastern States of Europe, have been raised to pre-eminence and power far beyond their numbers and are seeking everywhere to obtain totalitarian control. Police governments are prevailing in nearly every case, and so far, except in Czechoslovakia, there is no true democracy..."

Winston Churchill, Westminster College, Fulton, Missouri March 5, 1946

One of the most iconic images of the Second World War, indeed of the entire Twentieth Century, and probably for permanent posterity, is that of Soviet troops raising the flag of the USSR over the German Reichstag on the 2nd of May 1945. In the collective psyche of Russians this image symbolized final victory in their "Great Patriotic War" - for the greater world at large it symbolized the end of the Second World War in Europe. At the time it sent a message of great joy across the world - the penultimate final act (before VJ day) of six years of global conflict - the most devastating in human history, claiming, at a probably conservative estimate, 60 million lives. This image should by rights have been fossilized into humanity's collective consciousness as an image of a great moment - and yet this is not really how its legacy has turned out!

A number of features of this very famous photograph have over the years acquired a somewhat sinister symbolism - two in particular - one quite obvious to anyone living now in the 21st century - the other subtle, requiring very careful scrutiny. The image itself was taken by a Russian Jewish photographer by the name of Yevgeny Khaldei, who produced many enduring images of the Russian front, but who never received his due recognition on account of later Soviet anti-Semitism. Clearly the most engaging aspect of the photograph is that of the hammer and sickle on red background that symbolized the world's first communist state. But it came to symbolize much more than this - it represented to the world, the great Soviet experiment whose ideology would directly clash with that of the "capitalist West" - a clash of ideology that would determine world affairs for the next half a century. The first of all western leaders to recognize in this symbol a new threat to global security was Sir Winston Churchill. In his "Sinews of Peace" speech given in Missouri on the 5th of March 1946, we first hear the term "Iron Curtain" - the famous metaphor that would come to describe the divide between the Communist and capitalist states. Churchill was the first to understand that a new kind of

world order had arisen from the ashes of the Second World War - one that ushered in the "Cold War". Taking great offense to Churchill's speech many, communist Russians would date the beginning of the "Cold War" to Churchill's first use of this term. The Red Flag of Soviet Russian would become one of the most significant symbols to be universally recognized the world over - and to those in the West, the term "Red Flag" would become a symbol commandeered from much earlier iconography - of a warning or an alarm. The term "Red" itself would become a derogatory euphemism for any Communist or anyone with Communist sympathies.

The heroic image itself, quite apart from the Red Soviet flag, held somewhat more subtle sinister hints that perhaps the glorious cause was not quite so glorious or heroic as imagined. War is never really quite as heroic as propagandists like to depict - in actual fact is it universally a nasty and brutal business no matter how "spin doctors" try to pretty things up. Look closely at the wrists of the Russian soldier who is steadying his flag planting comrade. He wears a watch on each wrist - a clear indication, apparently in those times, of a looter! And possibly not just a looter - in the last desperate days of the Battle for Berlin, the fighting was very vicious - only one thing was on Russian minds - and it wasn't victory - it was revenge! German soldiers (and civilians) would be desperate beyond measure to flee from the Red Army and surrender in large numbers to the Americans, British and Canadians advancing on Berlin from the West. The soldier who wore two watches had in all probability killed for his loot - not a very heroic image at all! Later on Soviet authorities would force Khaldei to "clean up" his photograph. Official Soviet sponsored versions show the soldier wearing only one watch!

When we assess patients for cough, we must be aware of the signs and symptoms that alert us to the possibly that all may not be well, despite outward appearances. To this end we need be aware of the "CICADA" study which brings to our attention the "Red Flag" features of warning in cases of chronic cough.

Left: Khaldei's original photograph. Right: A later Soviet spin-doctored version. The watch on the right arm has been removed!

COUGH

Introduction

Cough is an extremely common symptom.

This more usually presents to primary care providers, but when it does so to an Emergency Department, the first priority will be to rule out potentially life-threatening disease.

"Red flag" features of chronic cough have been identified.

When immediate life threatening disease has not been detected, a decision then needs to be made on the most appropriate disposition, as serious underlying pathology may still be possible, even if not immediately life threatening.

Anti-tussives may be appropriate for **the short term** management of **acute** cough, but in general these are not recommended for chronic cough, where the priority will be to establish a diagnosis.

See also separate guidelines on Haemoptysis.

Physiology

Cough is a result, of deep inspiration, followed by a forceful breath holding valsalva with the sudden release of this manoeuvre.

In a forceful cough, air flow rates within the trachea, can approach the speed of sound!

Cough is a reflex activity with elements of voluntary control that forms part of the somatosensory system involving visceral sensation, a reflex motor response and associated behavioural responses. [3]

Cough may also be initiated at a central nervous system level without the stimulation of cough receptors. In this case it has been called psychogenic or 'cerebral' cough. [2]

Physiologically cough's purpose is clearing of the respiratory tract of secretions or foreign bodies.

Classification

The following definitions have been proposed: [3]

Cough:	A forced expulsive manoeuvre, usually against a closed glottis, that is associated with a characteristic sound
Acute cough:	Cough lasting up to 2 weeks

Protracted acute cough (children):	Cough lasting 2-4 weeks
Chronic cough (children):	Cough lasting more than 4 weeks
Chronic persistent cough (adults):	Cough lasting more than 8 weeks
Specific cough:	Cough associated with a condition recognised to cause a cough
Non-specific cough:	Cough without any specific disease association
Refractory cough:	Cough that persists after therapy

Pathology

Causes

Causes of cough range from the trivial to the life-threatening

The list of causes is extensive, but the following groups of causes should be considered:

1. Infective:

   This can range from oropharyngeal infection to tracheal to bronchial to pulmonary parenchymal infection.

   These may include:

   - Throat infections
   - Tracheal infections
   - Bronchitis, including protracted bacterial bronchitis
   - Pulmonary infections

     More specifically infective chronic cough is associated with:

     - ♥ Tuberculosis
     - ♥ Pertussis
     - ♥ Lung abscess
     - ♥ Mycoplasma infection
   - Pleurisy

Additionally "**postinfective**" **cough syndromes** can be a cause of persistent cough.

Postinfective cough often presents as paroxysms of coughing triggered by minor factors such as hot drinks or strong smells, and preceded by an acute respiratory infection.

Although the temporal association between a respiratory infection and persistent cough may make the diagnosis obvious, the difficulty for the clinician is that other causes of a persistent cough may present in a similar way, or a second cause of cough may have been triggered by the infection (eg asthma). Therefore other causes of cough may need to be excluded clinically or with investigations.

2. Allergic:

    - Rhino-sinusitis, (which may also be infective in causation).
        - ♥ Postnasal drip syndrome

3. Environmental:

    Environmental factors can include:

    - Smoking (including passive)
    - Atmospheric pollutants
    - Chemical
    - Biological

4. Foreign body aspiration

5. ENT conditions:

    - Vocal cord dysfunction
    - Space occupying lesions, of the oropharynx, trachea or larynx.
        - ♥ Tumours (benign of malignant)
        - ♥ Goitres
        - ♥ Vascular lesions
        - ♥ Infective, (abscess)

6. Obstructive sleep apnoea

7. Pulmonary conditions:

- Untreated/ uncontrolled asthma
- COPD:
  - The Medical Research Council (UK) definition of **chronic bronchitis** is: cough productive of sputum, occurring on a daily basis for 3 months in each of 2 consecutive years.
- Other chronic pulmonary conditions:
  - Interstitial lung disease
  - Pulmonary fibrosis (of any cause)
  - Bronchiectasis/ cystic fibrosis.
- Eosinophilic bronchitis
- Tumour, (malignant or benign):
  - In fact as a cause of cough this may be anywhere in the respiratory tree from the oropharynx to the lung).

8. CVS conditions:

- Left Ventricular failure

9. GIT conditions:

- GORD
  - Gastro-oesophageal reflux is a common cause of persistent cough.
- Recurrent aspiration

10. Drug Induced:

- ACE Inhibitors in particular can be a cause of cough

11. Psychogenic.

Clinical assessment

Important points of history:

1. Nature of the cough:

- Duration
- Frequency
- Change in usual pattern of a chronic cough.

2. Quality:

   This feature is somewhat subjective, and therefore is an unreliable and non-specific feature, but classically described patterns include:

   - Barking:
     - ♥ Croup
   - Whooping:
     - ♥ Whooping cough:
   - Very soft:
     - ♥ Epiglottis, (pain at the epiglottis restrains the force of the cough)
   - Bovine:
     - ♥ Lesions of the recurrent laryngeal nerve

3. Timing:

   - Nocturnal, suggests asthma, or left ventricular congestive cardiac failure
   - Immediately following eating or drinking, suggests aspiration.
   - Cough which is **absent** during sleep is suggestive of a psychogenic cause.

4. Associated symptoms:

   - Wheeze:
     - ♥ Suggests Asthma/ COPD
   - Sputum:
     - ♥ Suggests lower respiratory tract infection
     - ♥ Large volumes persistently, suggest bronchiectasis
     - ♥ Colour, clear as opposed to yellow/ green (which is more suggestive of infected/ purulent processes).

- Dyspnoea:
    - ♥ Suggests pulmonary disease.
- Haemoptysis:
    - ♥ Suggests a range of possibilities, but in particular, infection, (including tuberculosis) and malignancy should be considered

5. Risk profile for serious conditions which may result in persistent cough:
    - Malignancy:
        - ♥ **Smoking** is an extremely important consideration, particularly its degree and duration
    - Tuberculosis:
        - ♥ Night seats, weight loss, haemoptysis, epidemiological factors.
    - Recurrent aspiration:
        - ♥ Patients with reduced conscious state and/ or neurological conditions that affect the cough reflex.
    - Occupational lung disease:
        - ♥ Asbestosis in particular
6. Medications:
    - ACE Inhibitors in particular can be a cause of cough

Important points of examination:

1. Vital signs, including pulse oximetry:
    - **Abnormal vital signs, suggests more serious underlying illness**.
2. Signs that may indicate a lung malignancy or other lung pathology
3. Signs of CCF
4. ENT examination

Risk assessment in patients with chronic cough:

Be aware of the Red Flags of chronic cough!

The following factors have been identified as "**red flags**" for patients who present with **chronic** cough. [3] These patients should be considered for underlying potentially serious illness.

In adults:

- Haemoptysis
- Smoker with > 20 pack-year smoking history
- Smoker over 45 years of age with a new cough, altered cough, or cough with voice disturbance.
- Prominent dyspnoea, especially at rest or at night
- Substantial sputum production
- Hoarseness
- Systemic symptoms: fever, weight loss
- Complicated gastro-oesophageal reflux disease (GORD) associated with weight loss, anaemia, overt gastrointestinal bleeding (haematemesis or melaena), dysphagia, odynophagia, or empirical treatment failure for GORD
- Feeding difficulties (including choking or vomiting)
- Recurrent pneumonia
- Abnormal clinical respiratory examination
- Abnormal chest x-ray

In children:

- Prominent dyspnoea, especially at rest or at night
- Recurrent episodes of chronic, wet or productive cough
- Systemic symptoms: fever, weight loss, failure to thrive
- Feeding difficulties (including choking or vomiting)
- Recurrent pneumonia
- Stridor and other respiratory noises
- Abnormal clinical respiratory examination

- Abnormal chest x-ray

Investigations

Following clinical assessment, none may be required, when a diagnosis seems clear and benign.

Investigation is directed according to the index of clinical suspicion of any particular pathology.

The following may be considered:

1. Blood tests:
    - FBE
    - CRP
    - U&Es/ glucose
2. Sputum:
    - Microscopy
    - Culture
        - ♥ Including AFBs in those with high risk profile for tuberculosis.
    - Cytology
3. CXR:

    This is primarily screening for:

    - Infection
    - Malignancy

    And to a lesser degree:

    - Interstitial lung disease
    - Left ventricular Failure
4. CT Scan:
    - **High resolution CT scan of chest, and/or neck where clinically indicated.**

Management

Management of course depends on the underlying cause.

However, persistent cough itself becomes self-perpetuating because the mucosa of the upper airways becomes denuded due to the coughing. The damaged mucosa is then more sensitive to external triggers and any exposure will lead to renewed bouts of coughing, and so anti-tussives will have some role in management of adults with cough. [2]

Anti-tussives therefore may be helpful in the **short-term** control of symptoms of **acute** cough.

Non-specific cough suppressant therapy offers little benefit in managing **persistent / chronic** cough. Successful management for persistent/ chronic cough requires a treatment program based on accurate diagnosis.

Non-specific treatments:

For the non-specific symptomatic relief of acute cough, options include:

- Sedating antihistamines taken at night
- Short-term cough suppressant such as: [2]
    - ♥ Codeine
    - ♥ Pholcodine
    - ♥ Dextromethorphan
- For *acute severe* and distressing coughing:

    A trial of **nebulised lignocaine**

    This is to break the cough cycle and allow the mucosa to heal.

    The patient should be advised not to eat or drink for 2 hours after administration, or until the mouth is no longer numb. Use:

    Lignocaine 2% 2 mL via nebuliser, for 5 to 10 minutes up to 4 times daily for up to 1 week [2]

Children

Current recommendations from the Australian Government Therapeutic Goods Administration are that cough medicines should **not** be used in children younger than **six years old.**

There is some recent evidence that honey may reduce the severity and duration of a cough. In children more than one year of age, one to two teaspoons of honey taken 30 minutes prior to bedtime may be helpful. [4]

More specific measures:

These include:

- Low-dose inhaled corticosteroids are useful for suspected allergic rhinosinusitis
- Proton Pump inhibitors for cases associated with GORD
- Psychogenic cough may be managed by a Speech pathologist using techniques designed to relieve glottal constriction during inspiration and to recognise and alter the response to precipitants

Disposition:

When a diagnosis is not apparent, and an immediate life threatening disease has not been detected; a decision needs to be made on disposition.

Considerations will include:

- Duration of symptoms
- Risk profile
- Associated symptoms of concern
- Index of suspicion for any particular pathology

In general terms:

- If an upper respiratory tract pathology is suspected refer to ENT
- If lower respiratory tract pathology is suspected refer to Respiratory Physician and/ or Thoracic Surgeon.
- Psychogenic cough may be managed by a Speech pathologist.

References

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2. Respiratory Therapeutic Guidelines, 4th ed 2009.

3. Gibson P.G et al. POSITION STATEMENT: CICADA: Cough in Children and Adults: Diagnosis and Assessment. Australian (Chronic) Cough Guidelines summary statement. MJA Vol. 192 No. 5 1 March 2010, p. 265-271.

4. RCH Clinical Guidelines, Cough.

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