

Therapeutically Marketed Antitussive Preparations for Cough Management

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Abstract:-Cough is a reflex that attempts to expel the aggravation and to clear the aviation route. Cough has usually happened sickness in kids. Coughs are of many types which are divided based on duration, character, quality, and timing. The various type of cough is acute, subacute, chronic, productive, non-productive, chesty, mucus, dry and tickly cough. Whooping cough is very difficult to treat and it lasts longer for more than one to two months. There are several causes which are responsible for cough like respiratory tract infection, GERD, smoking, air pollution, chronic bronchitis and medications like ACE inhibitors. Cough has symptoms like heaviness in chest, fever, runny nose, drainage of mucus into the throat and continuous coughing. There are several treatments are available in form of medications and remedies. The categories of medication to treat cough are expectorant, antitussive, antihistamine, and decongestant. In this categories, various drugs are available in the market such as codeine, dextromethorphan, diphenhydramine, ephedrine, etc. these medications are available in the market as the brand name of benilyn, Sudafed, Robitussin, and Vicks. Homemade remedies also help to treat symptoms of cough like honey, ginger, turmeric, garlic, hing, jeera, warm liquid and so on. During cough so many things are avoided like eating cold food, overeating at night, eating fried food, sleeping flat on the back, smoking and caffeinated beverages. Some medications are restricted to use because of its abused use like codeine, dextromethorphan, and promethazine.

Keywords:- Cough, Whooping Cough, GERD, ACE Inhibitors, Expectorant, Antitussive, Antihistamine, Decongestant.

I. INTRODUCTION

A cough is a sudden and often repetitively occurring reflex which helps to clear the large breathing passage from secretions, irritants, foreign particles, and microbes. The cough reflex consists of three phases; an inhalation forced exhalation against a closed glottis and violent release of the air from the lungs following the opening of the glottis [1].

Most of time, irregular coughing is caused by a respiratory tract infection but can also be triggered by choking, smoking, air pollution, asthma, GERD, post nasal drip, chronic bronchitis, lung tumor and medications such as ACE inhibitors. Hacking begins when part of your breathing section ends up aroused or disturbed by issue, for example, residue, smoke or bodily fluid. Hack is either willful or

automatic [1]. Hack is basically a reflex that endeavors to evacuate the aggravation and to clear the aviation route [3].

Kids hack when the covering of the windpipe ends up bothered. This regularly happens when a youngster is wiped out or when the body is warding off an ailment and making heaps of bodily fluid or mucus. A kid's hack is frequently more awful when the kid is lying in bed in light of the fact that the bodily fluid can gather in the back of the throat [4]. Children tend to swallow the mucus rather than split it out, this can cause the child to have an upset stomach or vomit, especially when there is a coughing fit.

II. CLASSIFICATION

A cough can be classified by its duration, character, quality and timing [1].

A. According to duration;

- Acute (of sudden onset) present less than 3 weeks:
 - Infectious
 - Non-infectious
- Sub acute present between 3 to 8 weeks
- Chronic present lasting longer than 8 weeks.

B. According to timing;

- Only occur at night (nocturnal cough)
- Occur both at night and day
- Only occur at day.

C. According to character and quality [3];

- Productive :(when sputum is coughed up)
 - Chesty
 - Mucus
- Non- productive: (dry)
 - Dry [12]:
 - ✓ Dry hacking cough
 - ✓ Barking cough
 - ✓ Whooping cough
 - Tickly

➤ Acute and Chronic Cough

Acute cough have been divided into infectious and non-infectious causes.

• Infectious

Signs and symptoms that point to an infection include fever, chills, body aches, sore throat, nausea, vomiting, headache, sinus pressure, runny nose and post nasal drip.

- *Non-infectious*

Sign and symptoms that point to non-infectious cause include cough that occur when a person is exposed to certain chemicals or irritants in the environment. Coughs with wheezing or coughs that improve with inhaled or allergy medications [2]. The signs and symptoms of chronic cough can be hard for anyone to assess, because many causes of chronic cough have overlapping signs and symptoms. For example cough is related to environmental irritants, smoking, asthma, chronic bronchitis, ACE inhibitors medication, GERD and lung cancer [2].

- *Productive Cough*

Productive cough produce excess mucus or phlegm. It is caused due to viral or bacterial lung infections like in the case of a common cold, asthma, pneumonia, COPD, etc. symptoms of productive cough is coughing with sputum or phlegm production. Phlegm usually contains mucus with bacteria, debris or dead tissue and sloughed off cells, other symptoms are heaviness in the chest, fever, runny nose and drainage of mucus into the throat [5].

- *Chesty Cough*

During chesty cough you can feel tight as if someone was squeezing your chest too hard. Chesty coughs are caused by a buildup of phlegm in the lungs and result in chest congestion.

- *Mucus Cough*

During mucus cough you feel heavy as though an octopus is weighing down on your chest. At the point when bodily fluid develops in the chest, it tends to be thick and hard to dispose of by hacking. In this way it is valuable to have something that can help relax the bodily fluid and straightforwardness bronchial clog calming that inclination of largeness on your chest [3].

- *Non-Productive Cough*

Non-productive cough cannot produce mucus or phlegm.

- *Tickly cough*

Tickly cough is quite irritating. It feels uneasy and can trouble you while talking as though somebody is stimulating your throat with a plume. The aggravated region in the throat creates a tickly sensation making you hack.

- *Dry cough*

It is also known as hacking cough [4]. It is intense and painful. Some of the time you even need to abstain from hacking, in light of the fact that you are apprehensive it will hurt. Dry cough are caused by an inflammation of the upper air ways. Dry cough can be caused by infections such as a cold or the flu [3].

Dry cough are of three types:

- ✓ Dry hacking cough: in this person get a continuous cough with a feeling of something being stuck in the throat.
- ✓ Barking cough or croup: in this person feel in throat and difficulty in breathing during coughing.
- ✓ Whooping cough: also known as pertussis [4]. It is caused by bacteria and only seen in children [12]. a child with

whooping cough will have symptoms similar to an ordinary cold, but gradually the cough becomes worse, with severe fits of deep, fast coughing, the child will breathe deeply sometimes making a 'whooping' sound [4].

III. TREATMENTS

There are number of medications and various home remedies are available for treatment of cough symptoms. There is no good evidence one way or the other for OTC cough medications. While they are used by 10% American children weekly, they are not recommended in Canada and the United States in children 6 years or younger because of lacks of evidence showing effect and concern of harm [6]. An American college of chest physicians emphasizes that cough medicines are not designed to treat whooping, a cough that is caused by bacteria and last for months [7].

A. Medication for Cough Treatment:

Cough medicine also known as cough syrup or Linctus when in syrup form. The commercially available products may prescribe alone or with various combinations. Commercially available drugs for cough are as follow:

- *Expectorants*:- It is a substances claimed to make coughing easier while enhancing the production of mucus and phlegm. e.g., Acetylcysteine and Guaifenesin.
- *Antitussive*:- (cough suppressant): It is the substances which suppress the coughing itself. e.g., Codeine, Pholcodine, Dextromethorphan, Noscapine and Butamirate.
- *Antihistamines*:- it can reduce runny nose and watery eye symptom of cough. e.g., Diphenhydramine.
- *Antipyretics*:- it is a substance that reduces fever or body temperature. e.g., Paracetamol [6].
- *Decongestant*:- e.g., Phenylephrine, Ephedrine, Oxymetazoline and Xylometazoline [11].

Some brand names include Benilyn, Sudafed, Robitussin and Vicks among others. Most contain number of active ingredients.

- *Dextromethorphan*:

It is an OTC cough suppressant that works by affecting the portion of the human brain associated with coughing. It is sold as a liquid or capsule. It is found in such brand names as Vicks cough relief, PediaCare, Benlyn pediatric formula, Dextalone, Simply cough, Father John's medicine, Silphen DM and Nycoff. Its side effects include blurry vision, restlessness, nausea, confusion, drowsiness, headache and abdominal pain [10].

Dextromethorphan may be modestly effective in decreasing cough in adults with viral upper respiratory infections [6].

- *Guaifenesin*:

In thin phlegm or mucus in people's lungs to help suppress or reduce coughing. It sold as Mucinex, Bidex 40, Altarussin, Guifenex G, Guaifenex LA, Robitussin and Altarussin. It is available in liquid or pill form. Its adverse effect includes abdominal pain, a rash, diarrhea, hives, nausea, dizziness and vomiting [10].

➤ *Codeine:*

It is a prescription only remedy for coughs. It is an antitussive and acts on the brain's cough center, just as dextromethorphan does. It has drug addiction as a side effect [10]. Codeine was viewed as the 'gold standard' in cough suppressant, but this position is now questioned. The FDA in 2015 warned that the use of codeine containing cough medication in children may cause breathing problems [8].

➤ *Carbetapentane:*

It is a non-narcotic cough suppressant. Brand name includes Rentamine 12, Tustan 12s, Ricottuss H and Tannihist 12 RF [10]. Its side effects include confusion, seizures, constipation, insomnia, hallucination and dizziness.

➤ *Caramiphen:*

It is a cough suppressant marketed as Tusso-gest, Oratrine AT, Tuss vernade and Rescaps-D. It is available as capsules and tablets form. Its side effects include high blood pressure, nausea, insomnia, headache, a rash, chest pains, dizziness and drowsiness [10].

In 1898 heroin was also used as a cough suppressant but nowadays it is restricted to use because of its addictive nature. Dextromethorphan and promethazine are also restricted due to their abused use [6]. In dry cough, a preparation containing an antitussive such as Dextromethorphan or Pholcodine is the most suitable while in chesty cough, a preparation containing an expectorant such as Guaifenesin or Ipecacuanha is your medicine to treat [11].

Treatment of wet cough is mainly aimed at relieving the congestion in the chest. OTC expectorant can provide some relief. During treatment of main disease treatment of cough is also provided like for asthma is treated with inhaled bronchodilator may or may not contain steroid, pneumonia are treated with antibiotics etc. In case of bronchitis, there are prescription medicines that contain bronchodilator, or inhaler that contain steroid [5].

In some cases where the congestion might be severe a doctor might prescribe mucolytic agents like Bromhexin or Ambroxal, with or without a bronchodilator. These medications are important to provide symptomatic relief. Do not take cough medicine with antidepressant MAOI because it can make you very excitable or depressed and also increase blood pressure.

B. Remedies for Cough Treatment:

There are several home and homeopathy remedies available which are helpful in treatment of cough. Different types of cough have different treatments. Gargles, drinking warm liquid, throat lozenges, turmeric, honey, ginger, garlic, jiggery, hing, asafetida, jeera, mint leaves, tulsi leaves and Aloe Vera are also used as homemade remedies for cough treatment [12]. Steam inhalation moistens the airways and helps relieve a sore and irritated throat. A glycerin, honey and lemon cough remedy is also available to buy. This preparation does not have any active ingredients as such. It is thought to have a soothing action [11].

C. Homemade Remedies for get ride Cough:

In homeopathy there are several remedies which help to get rid of cough. e.g., Aconitum napeuus, Belladonna, Bryonia, Chamomilla, Forrum phosphoricum, Hepar sulphuris calcareum, Ipecacuanha, Nux vomica, Phosphorus, Pulsatilla, Rumex crispus, Spongia tosta and Sulphur [13].

➤ *Gargle:*

Gargle with warm salt water. Salt water can help facilitate the distress caused by a hack. It will likewise help treat a sore throat without really trying. 2. Honey: It is an excellent remedy for cough but it cannot give to child below 2 year of age because it produces botulism. Honey has analgesic property that eliminates mucus and soothes your throat. It has anti-oxidant and anti-microbial property that helps to relieve sore throat.

➤ *Honey:*

Honey is taken by mixing it with warm water or warm milk. It can also be taken with lemon juice in warm water.

➤ *Ginger:*

Its anti-inflammatory property helps to soothe irritation caused by sore throat. Ginger pieces are boiled with water and drink after cooled. It helps in non-stop coughing, sore throat and even congestion. Ginger is also taken with leaves of tulsi and honey.

➤ *Turmeric:*

Due to presence of Curcumin it is quite effective in treating viral infections like cough and cold. Curcumin is a powerful anti-inflammatory effect and it is a strong anti-oxidant. Take turmeric along with black pepper and hot water to get relief from dry cough. It is also taken with milk or as smoke of burning turmeric.

➤ *Garlic:*

Allicin in garlic has an anti-microbial, anti-bacterial and anti-viral property. It is helpful in treatment of cough when it is taken with honey and warm water [13].

REFERENCES

- [1]. Cough. Wikipedia, the free encyclopedia (2018). <https://em.m.wikipedia.org/wiki/cough>.
- [2]. eMedicineHealth (2018), medically reviewed by doctor on 19/02/2016, Manuel Hernandez, MD; John P. Cunha, DO, FACOEP. <http://www.emedicinehealth.com>.
- [3]. Benylin, Types of Cough, Johnson & Johnson Limited, (2017). http://benylin.co.uk/types_of_cough/.
- [4]. Cough Symptoms and Treatment, Parents.com, (2018). <http://www.parents.com/health/cough/>.
- [5]. Productive cough, the healthsite (2018). http://www.thehealthsite.com/disease/conditions/productive_cough/.
- [6]. Cough medicine. Wikipedia, the free encyclopedia (2018). http://em.m.wikipedia.org/wiki/cough_medicine/.
- [7]. 7."New cough guidelines urge adult whooping cough

vaccine; many OTC medications not recommended for cough treatment", American college of chest physicians, January 9, 2006.

- [8]. Chang, CC; Cheng, AC; Chang, AB (10 march 2014)."Over the counter (OTC) medications to reduce cough as an adjunct to antibiotics for acute pneumonia in children and adults". TheCochrane database of systematic reviews.3:CD006088.
- [9]. "Cough and cold medicine abuse" national institute on drug abuse. May 2014. Retrieved 19 April 2016.
- [10]. List of Cough Medicines, Leaf Group Ltd.,LIVESTRONG.COM (2018).
- [11]. <http://livestrong.com/article/27119-list-cough-medicines>.
- [12]. Cough Medicines, Patient Platform Limited (2018). <http://patient.info/in/health/cough-medicines/>.
- [13]. Dry cough, the healthsite (2018). <http://thehealthsite.com/disease-conditions/dry-cough/001/>.
- [14]. Health News, (2018). <http://zeenews.india.com/news/health/tips/>.