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## **UTILIZING LEE&CLARK'S REPERTORY OF COUGH & EXPECTORATION IN MANAGEMENT OF RESPIRATORY COMPLICATIONS OF COVID-19**

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### **ABSTRACT:**

**INTRODUCTION:** Cough being the most commonest and diagnostic symptom of Respiratory tract infection, played an important role in rapid spread of Covid-19 disease through droplet infection or aerosol spread. The Conventional system relieves the Respiratory symptoms like Cough and Expectoration through anti allergics and antihistaminics, but has lot of side effects like dizziness and drowsiness whereas Homoeopathy which treats the patient based on symptom similarity had more success rate in treating without any side effects, including the ongoing Pandemic Covid19. In such Violent Pandemic, Acute Prescription is most important than a Constitutional similitum, which can be chosen by using Regional Repertories that aid in the quick Prescription. This work is to show some case studies of Respiratory diseases which have shown good improvement by using the Regional Repertory on Cough and Expectoration written in 1884 by J.H.Clarke & Edmund Lee, which was overlooked by many Homoeopaths, and it may also be utilized in overcoming and treating Covid / Post Covid Respiratory complications.

**MATERIALS AND METHODS:** Repertory of Cough and Expectoration by Lee & Clarke was utilized and Rubrics similar to type of Cough and Expectoration in Covid was identified in this literature and mentioned. As a supportive study to show this Repertory utility A Prospective, Observational Case series study (conducted in 2009) of various age groups from 18-60 years of both genders having Respiratory diseases with Cough and Expectoration as the primary symptom were assessed subjectively and objectively over one year by Homoeopathic Management. Since this Repertory cannot be used for a Classical Repertorisation, cases based on Peculiar striking Key Note symptom like type of Cough, aggravations, Concomitant or Associated

symptoms, were Repertorized and remedies were selected. The outcome of the study was measured by symptomatic changes along with the investigations and Homoeopathy Management.

RESULTS: Among 30 cases, 11 cases suffering from URTI (Acute Pharyngitis, Laryngitis, ALTB..etc), and 19 cases belong to LRTI ( Bronchiectasis, Tuberculosis, Pneumonia..etc) Among the 30 cases, there is marked improvement in the 16 cases and 11 cases with moderate Improvement and 3 cases did not show any response.

KEY WORDS: Cough, Expectoration, Cough in Covid-19, Utility of Repertory on Cough and Expectoration.

CONCLUSION: This study has shown a positive results with good Improvement in many cases of Respiratory disease with Cough and Expectoration as the Primary Symptoms.

## **INTRODUCTION:**

The Respiratory system consists of conducting portion (Nose to Bronchiole) form a path for conduction of the inhaled gas and Respiratory zone ( alveolar duct to alveoli) where the gaseous exchange takes place. Anatomically It is also divided into Upper Respiratory Tract ( Nose, Pharynx, Larynx) and Lower Respiratory tract ( Trachea, bronchi, bronchioles, Alveolar duct, Alveoli).<sup>1</sup>

The term URTI is a misnomer as it incorrectly implies an absence of Lower Respiratory Tract Infections, and is common cause of Mild morbidity caused by many viral and Bacterial Infections. Upper respiratory tract infections including nasopharyngitis, pharyngitis, tonsillitis and otitis media constitute 87.5% of the total episodes of respiratory infections.<sup>2</sup>

The Cardinal symptoms of Respiratory system are Cough, Expectoration, Haemoptysis, Dyspnea, Chest pain, and Wheeze, but Cough and Expectoration are considered as Primary indicatives of Respiratory pathology.

“Cough is a rapid expulsion of air from the lungs, typically in order to clear the lung airways of fluids, mucus, or other material. Also known as tussis”.<sup>3</sup>

The cough is a defense mechanism may either voluntary or reflexively caused by the sensory distribution of Trigeminal, Glossopharyngeal, superior Laryngeal and Vagus Nerves. The efferent nerves include Recurrent Laryngeal and spinal Nerves.

The cough starts with a deep inspiration, followed by a glottic closure, relaxation of diaphragm, and muscle contraction against a closed glottis. Once the glottis opens the developed forces the elimination of mucus and foreign bodies from the airway.<sup>4</sup> The cough may be due to Respiratory / Cardiac / Mediastinal/ Gastric / Neurogenic in origin. Some environmental factors (Chemicals, Pollen, Dust) and Iatrogenic factors (Beta Blockers, ACE inhibitors) also do play role in causation of cough. A thorough Clinical Examination reveals the Clinical condition of the patient and also the underlying organs involved. The Differential diagnosis of Acute cough include Viral URTI, Viral / Bacterial Pneumonia, Bronchitis, Allergies, and Foreign body Inhalation, Bronchitis, Common cold, Asthma, Acute exacerbation of Chronic Diseases..etc.<sup>5</sup>

The various causes of Chronic cough included Post Nasal Drip, Chronic Bronchitis, Lung Abscess, Pulmonary edema, Bronchial Asthma, COPD, Pulmonary Embolism, Ca. Lung, Pulmonary Tuberculosis. Bronchiectasis, Cystic fibrosis.etc)<sup>6</sup>

In Homoeopathic perspective the Psoric patient suffers from dry Cough resulting from suppression of skin diseases and the type of cough is dry teasing and spasmodic.

The cough of Sycotic is usually bronchial hard and paroxysmal. Great deal of cough is required to raise a tiny sputum. Hence cough is prolonged and teasing. The cough of Tubercular patient is deep and prolonged.<sup>7</sup>

Expectoration is the word derived from the Latin word - "Expectorates- to drive from the chest, which is a mixture of Tracheo bronchial secretions, cellular debris, Micro organisms and saliva. Sputum is a mixture of cellular secretions, bronchial secretions, cleared organisms and saliva. When sputum is produced more than 100 ml it is termed as "Bronchorrhea".<sup>8</sup>

A disease can be identified by Expectoration basing on mucoid, serous, purulent, mucopurulent, blood stained. Special Investigations like culture is done if necessary.

There are many Respiratory illness like Pneumonia, ARDS, Sepsis, Tuberculosis, Pneumonia, Bronchiectasis, etc which lead to increased Phlegm or mucus production. In order to relieve the patients from these Phlegm accumulating in the lungs, and to avoid distress many procedures like Intubation, Extubation Tracheotomy/Tracheostomy,

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Manual Ventilation; Open Suctioning; Bronchoscopy; Non-Invasive Ventilation (BiPAP, CPAP, High Frequency Oscillating Ventilation, High-flow Nasal Oxygen), The sputum can be extracted by inducing saline Nebulisation and appropriate percussing procedure.<sup>9</sup>

In Homoeopathic Perspective, The Bloody Expectoration / Haemoptysis is seen in Psoric Constitutions and is due to functional causes, but if Tubercular Miasm is dominated it results in profuse Haemoptysis. The cough of sycosis has very little expectoration, though there is a large accumulation of expectoration in the lungs. The syphilitic cough is associated with tasteless yellowish / green clear sticky thread like discharge. Tubercular expectoration is viscid pus like offensive sticky mixed up with blood. Tubercular expectoration always sinks down and cannot float. The tubercular Miasm predominant persons has frequent desire to hawk or clear the throat.<sup>7</sup>

Characteristics of Cough & Expectoration in COVID-19: The Most Common symptoms and signs of Covid were Fever, Cough, Post Nasal drip/Expectoration, Olfactory/Gustatory Dysfunction, Fatigue and Arthragia. The cough of Covid is initially dry, but as the disease progresses it becomes more wet due to secondary infections process. It was found that dyspnea, Chest tightness, Haemoptysis, Expectoration and Fatigue were predictors of increased risk of mortality.<sup>10</sup>

The mortality of critically ill patients with COVID-19 is considerably high, and changes in sputum characteristics may be one of the early warning signs of the criticality of COVID-19. In an analytical study the critically ill patients had more Neutrophils and Lymphopenia after 1 week of standard routine care, with severe sticky Sputum. The percentage of patients in those who received large doses of Expectorants shown less when compared to severe illness group.<sup>11</sup>

A Recent Retrospective study of 179 patients with confirmed COVID-19 found that fatigue and expectoration were more frequently observed in non-survivors than survivors, which were associated with increased risk of mortality. *Besides, significantly increased pretreatment absolute leukocyte count, PCT, D-Dimer, LDH and ferritin, and decreased pretreatment absolute lymphocyte count were identified in non-survivors, which were all related to increased risk of mortality.*<sup>12</sup>

In another study it was concluded that Bronchitis in the inferior lobe of the lung and a dry cough are common in COVID-19 patients, suggesting that SARS-CoV-2 invades the lung epithelial cells in the Lower conducting airways and alveolar regions.

Almost half of patients with COVID-19 have abnormal Chest X-ray findings with peripheral Glass Ground Opacities affecting the lower lobes being the most common finding. Chest x-ray can be used in diagnosis and follow up in patients with COVID-19 pneumonia.<sup>13</sup>

Usually the Infection of Sars Cov 2 on Interferons activates aryl hydrocarbon receptors leading to Transcriptional up regulation of expressions of mucin in Alveolar epithelial cells, affecting Blood gas barrier causing Hypoxia.<sup>14</sup>

In a study it was concluded that after Covid-19 PCR -ve Report, some of the patients developed a post-infectious cough and that remained there for 7 to 12 days, suggesting some autoimmune process after infection.<sup>15</sup>

According to a study, Fatigue and Expectoration are the signs of Severe Covid Infection. Shortness of breath myalgia and dry cough along with Nausea is seen in several patients.<sup>16</sup>

In a study conducted Lymphopenia is considered to be the strongest predictor of Corona virus disease severity.<sup>17</sup>

REPERTORY OF COUGH AND EXPECTORATION: <sup>18,19</sup>. This repertory was first time published in Jan 1884 by A.L.Chatterton (201 Pages). For the compilation of this work about 28 authorities were being consulted including 28 volumes of North American Journal of Homoeopathy and six volumes of Raues annual record. The object of this repertory is to assist the physician in describing the various types of cough and Expectoration under one Repertory. The concomitants or associated symptoms are also given under the particular type of cough. The arrangement is according to the

- Anatomical part affected
- Under the type of cough
- Time of Aggravation
- Causation.

The mental symptoms are given as concomitants which are of great utility in selecting a remedy and ease in quick prescription. The total Repertory consists of 238 pages and 871 Rubrics which is divided into Two Sections: 1.Cough 2.Expectoration

The first part deals with Cough which runs in 238 pages consists of 636 Rubrics and Second part deals with Expectoration which runs in 35 pages consisting of 235 rubrics. This Repertory is one of the Regional Repertory during Kentian Era which tried to describe the various types of cough that describe underlying pathology unless we are well accustomed to clearly make out the type of cough though practically not much accurately expressible by the patient. There are many types of Cough that helps the physician in clinching the disease diagnosis though underlying cause is yet to be ruled out by investigations. There are many types of coughs described in this book which are practically difficult to be expressed by the patient such as the type of cough (wheezing and whistling cough, which appears to be similar). But the work is extensive on the various types of Cough and Expectoration which are useful for acute prescription. To know the utility of this Repertory, in 2009, A study of 2years was conducted on 30 patients, on both sexes and all age groups suffering from Respiratory complaints with Cough and Expectoration as the predominant / Chief symptom. This Repertory is used where there is paucity of symptoms (due to various factors like advanced pathology, Difficulty in Expressing the symptoms, patients on suction/infusion treatments..etc) for selecting a constitutional similimum.

Among them the cases belonging to the age group less than 10yrs (9 patients), 11-20yrs (3 patients), 21-30 (3 patients), 31-40 (5 patients) 41-50 (4 patients) >51yrs (6patients) were considered after the Inclusion and Exclusion criteria. Among them 11 cases suffering from URTI (Acute Pharyngitis, Laryngitis, ALTB..etc), and 19 cases belong to LRTI (Bronchiectasis, Tuberculosis, Pneumonia..etc). Out of 30 cases, in 18 cases there was Positive family History of Respiratory diseases, and 12 Cases does not have any Respiratory disease in the family. Since this Repertory cannot be used for a Classical Repertorisation, cases based on Peculiar striking Key Note symptom like type of Cough, aggravations, Concomitant or Associated symptoms, were considered and Remedies were selected. In the above study 16 cases were relieved, 11 cases were partially improved and 3 cases did not

show any response. (may be due to difficulties in case taking, potency adjustments, lack of symptoms..etc.) and Majority of the cases (16) belonging to Lower Respiratory Tract shown marked Improvement.<sup>20</sup>Utility of Lee and Clarke Repertory in SARS-COV2 Infection: It is confirmed that Cough, Fever, Expectoration, Fatigue, loss of smell and taste are seen in majority of cases. In Conjunction with it one could find some of the useful Rubrics in this Repertory basing on the above cardinal symptoms of Covid-19 such as:

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- *Cough with Breath arrested - page 26*
- *Bronchial tubes affections, Rattling of Large bubbles in chest - 30*
- *Bronchial cough - 30*
- *Catarrhal Cough, Chest aching in, Chest Excoriated, Chest pain with - 34*
- *Chronic Cough, Dry cough, croup like, Cough Cyanosis with - 55*
- *Epidemic cough in children, Expire cannot, Exhaustion after Cough - 76*
- *Expectoration Albuminous, Copious, Fetid, Gelatinous, Lungs from the, Mucus -222*
- *Purulent, Scanty, Thick, Tenacious, Throat from, Viscid.- 236*
- *Cough with Fever and associated symptoms - The Remedies mainly found are China, Nitricacid, Lycopodium, Psorinum, Rhustox, Mercsol etc. (under many Rubrics scattered)*
- *Cough with Weakness and associated Symptoms are found in many places and most of them are repeated ( under many Rubrics scattered) Some of the remedies found are Stannum, Kalicarb, Arsenic album etc.*
- *ARTERIES, and also heart, vio lent beating of, from dry cough, before midnight : Calc..pg.20*
- *Cough with weakness with Heart Affections - 93*

*Cough with Lower lobes involvement are:*

- *Tickling in the lower parts of the bronchial tubes, inducing cough. with slight Expectoration : Verat.*

- *Cough seems to proceed from lowest Ramifications of bronchial tubes, with wheezing in lower part of lungs: Squil.*
- *Infiltration in lower part of chest causes a dry cough : Kreos.*
- *Lower, infiltration in, causing cough : Kreos.*
- *Stopped up feeling, pain in centre or lower chest with : Phos.*
- *Dry cough with Scraping in Lower chest - Bryonia.*
- *Lungs in lower part of from cough: Med., Nit.ac, Myos. (1.), Tarent.*
- *Lungs, spasm - in lower part, agg. by cough : Thuja*
- *Wheezing in lower part of: Squil*
- *Sides, pain in, with cough: in right, lower : Kali-c*
- *Chest Pain in lower part of, from Cough : Amm-c, Phos.*
- *Spitting of dark, coagulated blood, pain in lower part of chest; anguish, shuddering; qualmishness: Puls.*
- *Taste, cough with spitting of blood, with previous sweet taste and great dyspnoea : Amm-c.*
- *\*\*Loss of taste and smell with Cough - Calcarea carb\* (Page no. 171).*
- *Cough with Expectoration and associated symptoms are found under rubrics Clots of blood, Expectoration with Coagulated blood etc*
- *Sputa of blood mixed with Clots (Pg. 219);*

*(As many Remedies were mentioned and some rubrics are scattered and repeated the page number is not mentioned and remedies for the above rubrics can be available through book reference).*

Conclusion:

Cough and Expectoration being the Cardinal symptoms of Respiratory disease, are the easily perceivable signs /symptoms that help the physician in assessing the severity of the



illness. "The Repertory on Cough and Expectoration though a less popular work, was a very innovative work with utility. In the study conducted, nearly 90% of cases the Improvement is marked (19 cases totally relieved, 11 cases partially relieved) and 10% (3 cases did not respond) by the help of Peculiar symptoms available in the case suitable for the Repertory. In Covid-19 too, cases with Fever, Cough, Fatigue, and Expectoration were highly confirmed Positive. In the thorough study of this Repertory I found the remedy Calcarea Carb for cough with loss of taste and smell which we rarely find in other Repertories, and Remedies like stannum met. Ammonium carb, Arsenic Alb, Verat alb, Kreosote, Spongia, Lycopodium are frequently mentioned under the rubrics which indicate their utility in Respiratory affections. This Repertory of Cough and Expectoration need to be thoroughly reviewed and if correctly utilized in the Present pandemic situation, it would be more useful for many Homoeopaths. It also brings out the Common Remedies for Rare Symptoms and Rare remedies for the Common symptoms thus making useful in Covid and Post covid Respiratory Complications too.

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