Efficacy of Bryonia Alba in Covid-19 Infection

Smt. Deore Rohini Ganpat[1], Dr. Aher Narendra Trambak[2]

[1]*Assistant Professor, Department of Chemistry, MVP Samaj's SSSM College, Saikheda, Nashik, Maharashtra, India.*
[2]*Swami Vivekanand Homeopathy Clinic, Nashik, Maharashtra, India.*

Abstract

Covid-19 (Novel corona virus) is a new corona virus found in 2019. It is fatal. Whole world is trying to fight against it. The number of new cases increasing day by day due to its increased affinity to bind human ACE-2 receptors (Angiotensine Converting Enzyme-2). It spreads mostly through droplets coming out through sneezing of the infected person to close contacts. The drugs like fabiflue, azithromycine, HCQ, remdecivir, favipiravir, dexamethazone are commonly used to treat this infection in present days. Whole world is trying to find out vaccine for covid-19 but yet not successful. Homoeopathy has prove its antiviral action in 1918 against Spanish flue and in 2006 against chicken guinea. Many researches are going on with homoeopathic medicines to find their efficacy in covid-19 infection. Some medicines like Arsenicum album, Bryonia Alba, Antimonium arsenicum, Camphora, Gelsemium, Carbo Veg, Zincum muriaticum find more effective against covid-19 infection. From that, Bryonia Alba is showing most effective results in present researches. This study is helpful for cure of covid-19 patients. It is also to encourage others to apply homoeopathic medicines in current pandemic. More studies are required to explore the action of many other homoeopathic remedies to cure Covid-19.

Keywords: Covid-19, ACE-2 receptors, Bryonia Alba, MERS, SARS, Pneumosides type -1, Pneumosides type -2, Interleukin -2, Interleukine-6, TNF- alpha, Cucurbitaceae, Pneumonia, hepatization.

1. Introduction

Corona is a family of many viruses. Covid - 19 also belongs to this family of corona viruses. In 1960s, Scientist discovered the human corona virus for the first time then in 2002, it was known as SARS then after 10 years in 2012 with the name of MERS and in 2019 with name of Covid-19, it is a single stranded RNA virus with a protein coat known as a cusped. There are spicules of glycoprotein on the surface known as spikes of the corona. The difference between MERS and Covid-19 is only one amino acid in RNA structure, Covid-19 has one amino acid more than MERS. Corona viruses are fastidious because they grow in particular or specific cells only. Scientist assume that Corona virus first developed in Bats then spread to humans through a carrier means. SARS spread from bat to Civet to humans. MERS spread from bat to Camel then to humans and Covid-19 spread from Bat to pangolin then to humans [7].

2. Transmission of the corona virus to host

The transmission of the infection is through droplets that come out while sneezing, coughing or spitting. The droplet remains in the air for around 1 to 8 hrs. because of the different molecular weights. When the host is exposed to carrier and the surfaces where the droplets have settled. Then the host may be infected if they reach their respiratory track by any means. It can also be transmitted via fecal-oral route as well. That is why WHO guidelines for social distancing, Wearing mask, sanitization, quarantine etc. [7]. Favorite place for corona virus is respiratory track of human beings and most favorable site is the alveoli of lungs. Alveoli are of two types Pneumosides type 1 (for gaseous exchange) and Pneumosides type 2 (producing surfactant to maintain the size of alveoli) [7,8]. Covid-19 likes to live in Pneumosides type-2,

because it has ACE-2 receptors, when corona infects the host it's spike of glycoprotein fits in ACE- 2 receptor just like ligands while inside the cell, some lysosomal activities start due to stimulation of the inner side of the cell membrane. The RNA of the single stranded virus ultimately enters the cell just like phagocytes [7, 8].

Now the RNA of virus acts as mRNA in the cytoplasm ribosome's do translation and forms different types of protein this polyproteins are collected in the cytoplasm & form the capsid & spikes of the viruses.

In another mechanism, viral RNA reaches to an enzyme known as RNA dependent RNA polymerase. It forms many RNA's from the single RNA in the cytoplasm. This RNA make coating from the fragmented polyprotein by translation in the ribosome resulting in forming a new corona virus inside the cytoplasm which comes out from the pneumoside type-2 by breaking it's cell membrane. These viruses can infect the other pneumosides type-2 of alveoli & from here the disease progress rapidly. Therefore, now we know that the first effect is on surfactant then it affects other pneumoside indirectly [7].

3. Second phase

When the cell burst, they release some inflammatory mediators that invites macrophases that releases IL-2 (interleukin), IL- 6, IL-7, TNF-alpha, and IP-10 & more, these mediators entered from alveolar space into the blood & acts as vasodilators. Vasodilatation causes the pooling of blood. In contrast, vasodilatation of alveolar capillaries result in increase permeability so plasma may enter into interstitial spaces & accumulate which leads to compression of alveoli due to which some of the fluid is able to entered into the alveoli causing alveolar edema which drowns out the surfactant (that decreases the surface tension of the alveoli in order to maintain its shape). Due to increase surface tension, the alveoli collapse or shrink.

The accumulation of fluid between the capillaries and the alveoli interrupts the gaseous exchange at the alveolar membrane. It causes hypoxia & the patient faces difficulty in normal breathing at the same time, during an inflammatory reaction many neutrophils enter into alveolar space, which releases reactive oxygen species & proteases. It destroys some of the viruses along with pneumoside type-1 alveolar cells, due to which gas exchange drastically reduces & further increase in hypoxia.

All the slough of the destroyed cells collects in the alveolar cavity along with some protein this causes consolidation, which also alter the gaseous exchange. There is a little expectoration & its color may vary as per secondary infection that helps in diagnosis & selection of proper medicine to homeopathic doctors [7, 8, 9].

Simultaneously the inflammatory mediators IL-1 & IL-6 reach to the hypothalamus of CNS & stimulate it to secrete prostaglandin (PG-2) which re-establishes the thermostat & increase the body temperature which is known as fever. The low partial pressure of Oxygen chemoreceptor's CNS stimulation increase heart rate (tachycardia) + increase respiratory rate (change in the pattern of the breathing).

Prolonged inflammation causes septicemia CVS vasodilatation & increase capillary permeability, fluid accumulates in extra cellular space decreased pressure on vessels (causes low BP or Hypotension reduced cardiac output that may lead to multiorgan failure.

4. Kidney – increase in creatinine & BUN

Liver releases inflammatory enzyme like SGOT / SGPT /bilirubin / CRP / fibrinogen/ IL-6 that leads to fibrosis of lungs.

4.1. Symptoms of Corona Infection

(1) The patient is sneezing like influenza with malaise & fever with loss /alteration of test or smell [7,8]

(2) Roughness, scrapping or pain in the throat with difficulty in swallowing [7,8]

(3) Cough initially dry followed by productive cough [7,8]

(4) Respiratory distress & cough with heaviness in the chest, pain in chest in different postures & movement [7,8]

(5) Wheezing, rattling or crackling on auscultation [7,8]
(6) Severe acute respiratory distress syndrome [7,8]
(7) Hypoxia or cyanosis & swelling of the body, high fever & hypotension & hypervolemia with enlargement of liver & spleen [7,8]
(8) At the end septicemia /cardiac / renal failure, or multiorgan failure. [7,8]

4.2. Lab Investigations

(1) Increased CRP Level and Increased ESR [10]
(2) Decrease Neutrophils and WBC, Lymphopenia [10]
(3) Increase SGOT, SGPT, Serum Bilirubine [10]
(4) Increased D-Dimmer [10]
(5) Increased Serum Creatinin and Bun [10]
(6) Positive RT-PCR, Positive Nucleic Acid Amplification Test (NAAT) [10]
(7) X-Ray – Ground Glass Haziness of X-Ray Chest Pa View [10]
(8) CT-SCAN – Ground Glass, Consolidation, Crazy Paving Pattern [10]

5. Bryonia Alba

In the family, Cucurbitaceae Bryonia is smallest genus. In Europe and west, Asia about 12 species is distributed. In central Europe Bryonia, Alba (white bryony) is found. Roots of this plant are useful to prepare medicine. Bryonia Alba has been used traditionally in the treatment of headache, cough, pneumonia, peritonitis, Typhoid, inflammation of serous tissues, jaundice, heart tonic and rheumatism. [11]
Chemical composition of Bryonia Alba. Phytochemical analysis of bryonia Alba indicated the presence of carbohydrates, proteins, alkaloid, saponins, steroids and triterpenoids. Bryonia alba also contains alkaloid (bryonicin), flavonide, saponarin, vitexin, iso-vitexin, 5,7,4,trihydroxy flavon, 8-c glucopyranoside, lutonarin , iso-orientine, glycosides, 22- deoxocucurbitosides A & B, 22-deoxocucurbitacin- D, Cucurbitacine-L, 23,24-dihydrocucurbitacin B[11].

6. Uses of Bryonia Alba

Dry cough, Pneumonia, bronchitis, cancer, constipation, enteric fever, gastro-enteritis, headache, Joint pains, jaundice, liver disorders, milk fever, myalgia, peritonitis, pleurisy, pleurodynia, whooping cough, yellow fever.

6.1. Pathology in Bryonia Alba

-Pneumonia [2]
- Bronchitis [2]
- Coagulated brown hemoptysis.
- Hepatization in lower lobe of right lung
- Inflammation of pleural membrane

6.2. Pattern of breathing

The breathing of Bryonia is panting and more rapid, little short rapid breaths, due to deep breathing the pain is increases, the Bryonia patient desires to deep breathing, has to breath deep, deep breathing causes much pains. “Constant disposition to sigh” but he cannot due to severe pain. [1]

6.3. Posture

The patient cannot able to move his hand or foot, the right lung pains mostly; patient wants to lie on right side or back and avoids motion [1]. We know the Bryonia patient mostly lie upon the affected side, much painful side in order to decrease the movement that respiration causes and he wants his hand under right side of chest [1]. The Bryonia patient mostly sits up and holds the chest or head, pressing hands on the chest while coughing, he feels as if the chest would fly to pieces when coughing [1].

6.4. Symptoms of Bryonia Alba

1) Nose
Continuous sneezing, Sneezing in between two coughs, smell is loss [1]. The complaints of Bryonia mostly commence in the nose, causes sneezing, corryza, watering of the nose, and redness of eyes, lacrymation aching pain in the nose, head and eyes on first day.

2) Throat
Soreness of throats with stitching type of pains, dryness of throat with parched appearance of the throat.[1], Hawks brown lumps, with effort, Throat dry, scraping roughness in, Back of throat seems swollen, Apthous patches; recurring [2]. "Constitutional tendency to apthous formation in the throat", small white spots seen in the throat [5]

3) Thirst
Much thirst for more quantity of water at long interval [5]. Bryonia patient to have much thirst; at wide intervals he wants to drink more quantity of water [1]

4) Taste
The Bryonia patients losses his sense of taste, when bryonia patient has corryza he nothing tastes natural, Taste flat, insipid, pasty. Tongue thickly coated white [1]

5) Desires and Aversion
-Aggravated from eating. The stomach cannot able to digest food so patient has aversion to all food [1]
- Desires things quickly but refuses when offered [1]
- He desires the food which he has an aversion in the stomach.
- During fever and headache patient want cold things which causes increase the cough and pains.
- In chill state Bryonia often has desire for ice-cold water that chills him dreadfully [1]

6)Fever
- Chill with hot head and red face, aggravated by warm room; Dry burning heat with aggravation of all the symptoms; Blood seems hot; Painful continued fevers; Sweat sour or oily [2]

7) Respiratory symptoms
- Patient has dry, hard, racking cough with scanty expectoration; spasmodic dry Cough with gagging and vomiting. Stitching inside the chest. He feels headache as if head would fly to pieces [5]
- Aversion to least motion, even to distant parts is due to its action on nerves and muscles; Mucus membrane become dry, hence discharges are scanty and adherent; Effects are very painful, on coughing holds sides, chest, head. Every spot in the body is painful to pressure [5]
- Cough dry, hard, very painful at night as of from stomach, patient has to sit up. Aggravated mostly by Eating and drinking. [1]
- Wants to take deep breathing, but cannot because it exits cough. The expectoration is rusty blood streaked and tough. [1]
- Sharp stitching pain in the chest or at right scapula region, Aggravated by breathing deep and coughing.
- Coming into close warm room increases cough.

- Patient has to holds his chest or presses his sternum when coughing.
-The cough sound is like Dry friction.
- Cough with sneezing [2]
- In the Bryonia Alba complaints develop slowly i.e. slowly for acute conditions.
- The complaints of bryonia Alba mostly comes few hours after taking cold, one day after an exposure. Most of the complaints of Bryonia Alba patients started in the nose. It mostly causes sneezing, corryza, watering of the nose, redness of the eyes, lachrymation, aching pains in the nose, eyes and head on the day first. After that the pains are goes down in the posterior part of the nares, after that the throat, after that the larynx, with hoarseness and then the bronchitis comes on and then not checked it goes into pneumonia and pleurisy. In this way trouble has travelled from the beginning of the respiratory tract, means nose to the lung tissue [1]
- Inflammation of pleural membranes.
- There is much irritability present in Bryonia patient; bryonia Alba patient does not wants to give any answer. Because every word that compels him to think will aggravates his complaints [1]
- most commonly the Bryonia alba complaints commence with the cold; there may be at first loss of voice, with there is rawness sensation in the trachea and great soreness feeling in the chest, cough is dry hawking as if chest would burst from coughing [1]
- The Bryonia patient mostly sits up and holds his head and chest, pressing both the hands on the chest while coughing, he feels as if the chest

would fly into pieces while coughing. Pains present in the chest on both sides but right side mostly affected [1]
-in the condition like pneumonia, bryonia mostly affects right side [1, 2]
- The bryonia Alba patient cannot move his hand or foot; the pains are mostly present in the right lung, and he has to lie down mostly on the right side or back and avoids motion [1, 2, 3]
- There is Inflammation of pleural membranes. When pleura is involved and patient have the sharp stitching pains; every time he respire causes severe pains, the condition may be pleuropneumonia or simple pneumonia.
- We see the Bryonia Alba patient mostly lying upon the affected side. On the painful side to avoid the motion that respiration causes; and always he will have a hand under the chest to see if he cannot hold it still.
- In Bryonia Alba patients the expectoration is mostly of a reddish tinge, is rusty, if patient is having this symptom and the right side affected it will be more strongly Bryonia.
- The Bryonia alba breathing pattern is mostly panting and very rapid, little short rapid breaths, deep breathing increases the pain, the Bryonia patients wants to breath deep, needs deep breathing but it causes much pain. "Constant disposition to sigh," but cannot because it hurts him [1, 6]
- Dry spasmodic cough, due to whooping cough whole body shakes.
- Cough compels him to spring up in bed involuntarily, painful cough with difficult breathing, cough that shakes the whole body. Tough difficult expectoration.

7. Mental symptoms of Bryonia Alba

-In pneumonia when Bryonia patient is wakes from the stage of stupefaction he is confused sees images, he thinks that he is away from home and he wants to be taken home [1].
-patient wants something and he knows not what [1].
-Desires for things but he refuses the things when offered [1].
-Apprehensive fearfulness [1].
-Anxiety in whole body that forces him to do something constantly [1].
-In Bryonia as in arsenic there comes an anxious and uneasy feeling, which forces him to move, but the patient is worse from motion yet so uneasy and anxious that he must move [1].
-The mental state of Bryonia is mostly relieved from cool air; he always wants the windows open [1].
-the bryonia Alba patient has Fear of death. He has full of fear, much anxiety, hopeless of recovery, great despondency both mental and bodily quietness required, that is bryonia Alba patient wants to keep still [1].
-Bryonia Alba patients are always worse from visitors. [1]

7.1. Aggravation

<By motion, <inspiration, <coughing exertion, <deep breathing, <raising up, <stooping, < after eating, <drinking, <entering a warm room, < deep inspiration, < damp weather. [1, 2, 5]
Amelioration:-
>by absolute rest either mental or physical, >lying on painful side, >quite, >open air, >cool air and from cool applications, > [1, 2, 5]

7.2. How Bryonia Alba acts

Bryonia Alba acts on the law of homoeopathy "similia similibus curanter" means "like cures like". Bryonia Alba when given to the patients of Covid-19, whose symptoms are similar, it helps to develop early immunity against covid-19 virus and helps to develop antibodies. In addition, patient may get cure early. [12]

7.3. Repetitions of doses

1) In first stage thirty can be repeated, if needed.
2) The second stage 200 is the best suitable potency
3) Third stage 30 or 200 by inhalation mode and can be repeated frequently.
4) Potency selection may vary according to condition of the patient and pathology [12].

Conclusion

As Bryonia Alba covers many symptoms of Covid-19, it may find most efficacious in Covid-19 patients with pneumonia involving right lung when other symptoms agrees.

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