



**VIRAL PNEUMONIA AND COVID-19: A CASE RECOVERED BY HOME-BASED  
MANAGEMENT**

**Noorush Shifa Nizami<sup>1</sup>, Dr. Seema Tabassum<sup>2</sup> and Dr. Ajit Singh<sup>3</sup>**

<sup>1</sup>\*Doctor of Pharmacy (PHARM-D) Intern, St. Pauls College of Pharmacy, Nagarjuna Sagar Road, Turkayamjal, Hyderabad, T.S – 501510.

<sup>2</sup>\*B.Pharmacy, Pharm.D- PB, Assistant Professor, Department of Pharmacy Practice, St Pauls College of Pharmacy, Nagarjuna Sagar Road, Turkayamjal, Hyderabad, T.S – 501510.

<sup>3</sup>Co-founder & Chief Executive Officer, CliMed Research Solutions, Grugram, India – 122001.

**\*Corresponding Author: Noorush Shifa Nizami**

Doctor of Pharmacy (PHARM-D) Intern, St. Pauls College of Pharmacy, Nagarjuna Sagar Road, Turkayamjal, Hyderabad, T.S – 501510.

Article Received on 07/09/2020

Article Revised on 27/09/2020

Article Accepted on 17/10/2020

**ABSTRACT**

SARS-COV-2 is a type of virus which is typically affecting the respiratory tract, the virus starts its infection after entering the lungs and then it causes cold fever associated with pneumonia, bronchitis, and severe acute respiratory syndrome (SARS). Here we are presenting a case of SARS-CoV-2, and viral pneumonia with the chief complaints such as fever, headache, weakness, shortness of breath, cough since one week. We present the case of a 47-year-old male with a history of diabetes for the past seven years, who found with the clinical features of COVID-19 and chest CT Scan and other investigations were found abnormal. Depending on that, the treatment was given to the patient, and along with that, natural immunity-boosting supplements were prescribed with regular oxygen monitoring was done. People are losing their lives due to a rapid increase in the number of cases of COVID-19 day by day and unavailability of healthcare facilities. This case explains the course of successful home-based pharmacological and non-pharmacological management of a COVID-19 patient. The present case also shows how immune-booster therapies help in alleviating the symptoms and improve the recovery in a COVID-19 patient.

**KEYWORDS:** COVID-19, Natural immunity, Vitamin C, SARS-COV-2.

**INTRODUCTION**

Coronavirus is the type of viruses that typically affect the respiratory tracts of birds and mammals, including Human beings. It causes pneumonia, common cold, bronchitis, severe acute respiratory syndrome (SARS).<sup>[1]</sup> Because of viral pneumonia, the air sacs in the lungs get infected and inflamed, and they will fill up with fluid. Anything that weakens the body's immune system can raise the chances of getting pneumonia.<sup>[2]</sup>

Transmission is through droplets. When an infected person coughs or sneezes, the virus can be transmitted or via contaminated surfaces such as door handles etcetera also. The incubation period is believed to be 14 days. People may be able to infect others before a symptom develops/appear. It is important for people to guard their eyes, as well as their mouth and hands, to slow the spread of respiratory viruses like the novel coronavirus. Clinical presentation of COVID-19 associated with pneumonia includes fever, cough, fatigue, dyspnea, anorexia, productive sputum myalgia, sore throat, nausea, dizziness, headache, vomiting, abdominal pain.<sup>[3]</sup>

The patient may carry the virus for up to two days or two weeks the general symptoms seen in COVID-19 patients are as follow.

**DAY 1 TO 3**

Initially normal cold and flu like symptoms, fever, mild or no throat pain, diarrhea, vomiting.

**DAY 4**

Throat pain of the patient increases intensely, patient voice becomes sore, increase in body temperature, patient may experience disturbance while eating or drinking, the other symptoms are mild headache and mild diarrhea.

**DAY 5**

On the fifth day of infection things start to get more complicated, such as intense throat pain, difficulty or pain while drinking and eating, increased soreness of voice, pain in movement of body, joint pain and weakness all over the body.

**DAY 6**

Increased temperature, dry cough with painful throat, difficulty in eating, swallowing and talking, person feels

very tired and nausea, difficulty in breathing, the pain from joints extends too fingers, increased intensity of diarrhea and vomiting.

**DAY 7**

Increased intensity of fever up to 100.4 ° Fahrenheit,, excessive coughing with sputum, body pain, headache, vomiting, and diarrhea worsen.

**DAY 8**

Every time the patient breathes there will be severe difficulty in breathing, chest becomes very heavy, excessive coughing, headache and joint pain, increased body temperature.

**DAY 9**

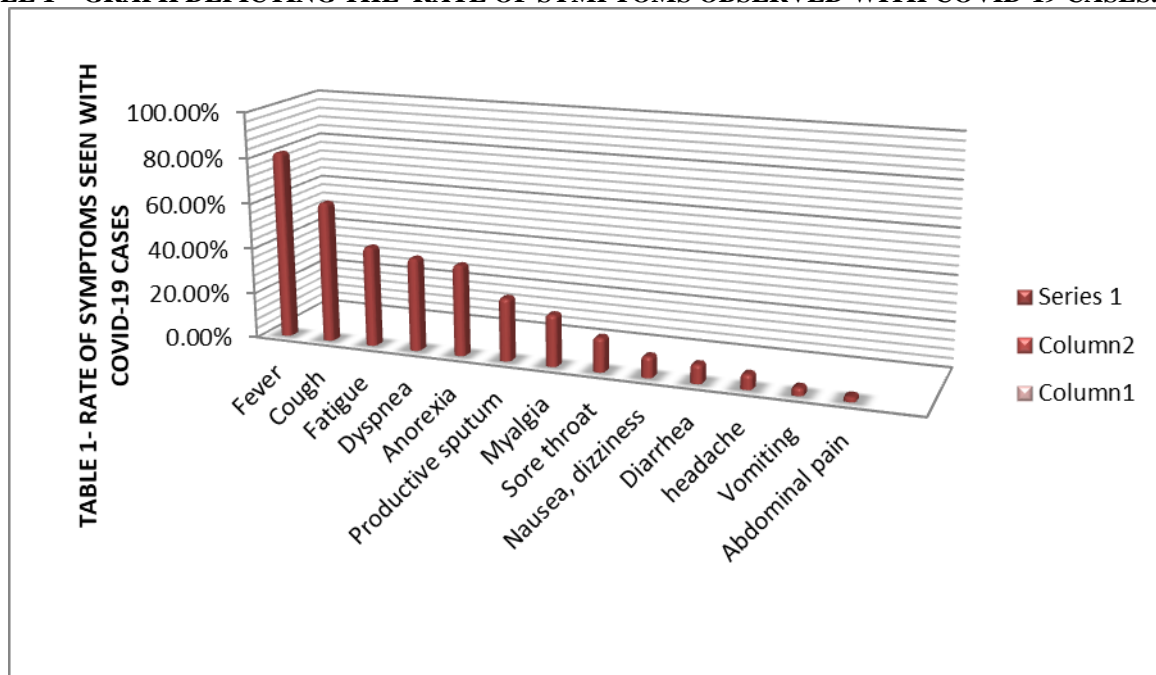
On the ninth day of infection all the symptoms gets worse.<sup>[5]</sup>

Fear is an adaptive emotion that can serve to mobilize the energy to deal with the potential threat. But, when fear is not calibrated to the actual threat, it can also be maladaptive. For example, when fear is too excessive, this may lead to detrimental effects both at the societal level (e.g., panic shopping or xenophobia) and the individual level (e.g., mental health problems such as phobia and social anxiety). however,if there is insufficient fear, that may also result in harm for society and individuals (e.g., due to people ignoring government measures to slow the spread of coronavirus or due to reckless policies that ignore the risks). On the other hand fear also triggers safety behaviors such as washing hands

which can mitigate certain threats such as contamination, but they may also enhance fear paradoxically (e.g., contamination concerns and health anxiety). And also the, societal safety measures (e.g., lockdown) to prevent spreading of infections. basically, when such safety measures are too prolonged or strict, they may lead to negative consequences such as unemployment and disruption of the economy. With the outbreak of the coronavirus disease in China in December 2019 and in Europe in February 2020, national polls endangered thousands of life which indicate sharp increases in fear and worries relating to the virus.<sup>[6]</sup>

Non-Pharmacological Interventions for the prevention of COVID-19 transmission includes, all persons should avoid groups of people, maintain physical distance of at least 1-2 meters, perform hand hygiene frequently, use respiratory hygiene, and refrain from touching their mouth, nose, and eyes. Social distancing is necessary as effective interventions were likely delayed. Washing hands remains the cornerstone of infection prevention, Frequent hand washing is encouraged, alcohol-based hand rub is appropriate. Use of mask must be considered in light of purpose (prevention or source control), exposure risk, vulnerability (mask wearer and population), setting, feasibility, and type of mask (medical, cloth). Advantages of wearing mask include reducing potential exposure risk, reduced stigmatization of those wearing mask. Disadvantages of mask include self-contamination, dermatitis, discomfort, false sense of security. Masks may be difficult to wear by those with certain disabilities.<sup>[7]</sup>

**TABLE 1 – GRAPH DEPICTING THE RATE OF SYMPTOMS OBSERVED WITH COVID-19 CASES.<sup>[8]</sup>**



Patients need the emergency admissions to the hospital alongside the intensive care support and isolation ward facilities. Thousands of lives are endangred and COVID-

19 has created a global emergency. Extensive laboratory diagnostic tests should be done for patients with suspected infection. Patients may present with an

elevated erythrocyte sedimentation rate, lactate dehydrogenase, C-reactive protein, creatinine, and prolonged prothrombin time. Phylogenetic analysis and full genome sequencing on fluid from bronchial alveolar lavage can confirm COVID-19 infection. Investigations for other respiratory pathogens should also be done.<sup>[4]</sup> Image findings may be severe to diagnose COVID-19. Chest X-ray abnormalities were present in 33% -60% of patients. The highest potential to diagnose COVID-19 holds chest CT scans, chest CT scans of COVID-19 cases present with bilateral ground-glass opacifications will be dominant during early stages, and consolidation rarely presents without ground glass opacification.<sup>[9,10]</sup>

Since SARS-CoV-2 is a newly discovered virus, there are no specific drugs identified or are currently available. An economical and efficient therapeutic strategy is to repurpose existing drugs, i.e., using the drugs which were used before for viral infections. This is on the basis of genomic sequence information coupled with protein structure modeling.<sup>[6]</sup> First-line treatment for fever include antipyretic therapy (paracetamol), whilst expectorants like guaifenesin may be used for non-productive cough.<sup>[4]</sup> Due to respiratory distress, hypoxemia, or shock requires the administration of immediate oxygen therapy at 5 L/min to reach SpO<sub>2</sub> targets of  $\geq 90\%$ .<sup>[7], [8], [9]</sup> Broad-spectrum antibiotic therapy should also be given within 1 hour of initial assessment for sepsis. And antiviral treatment may be prescribed.<sup>[10]</sup>

## REVIEW OF LITERATURE

- Globally COVID-19 crisis is leading challenge across the world, to fight against SARS-COV-2 it is mandatory to attain and maintain good nutritional status. Body has its own natural defense mechanism. due to some factors such as serious heart diseases, obesity, asthma, kidney and lung diseases, diabetes, drinking alcohol, smoking and sleep disturbances, the natural defense mechanism fails to produce its effect against infectious diseases. A healthy diet can boost up the immune system and body will have increased stamina to fight against COVID-19 or other chronic infectious diseases. A healthy balanced diet will automatically give rise to a strong immune system that can help withstand any assault by the virus. healthy dietary habits can help to maintain the physical as well as mental health of the individual because strong immunity can be a major weapon to fight against COVID-19 and also many other diseases and infections (Noorush Shifa Nizami et al).
- The use of corticosteroids in COVID-19 patients can be controversial. The Chinese Thoracic Society developed a consensus statement on the use of corticosteroids in COVID-19 patients, in that low-to-moderate dose of corticosteroids in short courses for critically ill COVID-19 patients is recommended. However, there are potential risks that are associated with corticosteroids, such as

secondary infections and prolonged virus shedding (Juan A et al)

- Diagnosed COVID-19 by CT scans, chest CT scans of COVID-19 cases present with bilateral ground-glass opacifications will be dominant during early stages and Since SARS-CoV-2 is a newly discovered virus, there are no specific drugs identified. An economical strategy is to repurpose existing drugs. The First-line treatment for fever include antipyretic therapy along with that expectorants such as guaifenesin may be used for non-productive cough. Due to respiratory distress or hypoxemia, requires the administration of immediate oxygen therapy at 5 L/min to reach SpO<sub>2</sub> targets of  $\geq 90\%$ . Broad-spectrum antibiotic therapy should be given within 1 hour of initial assessment for sepsis. And antiviral treatment may also be prescribed (Asmundson et al).

## CASE REPORT

A 47-year-old male patient presented with shortness of breathing, fever, cough, and weakness, wheezing sound while coughing for one week. H/o type 2 diabetes mellitus-for seven years, on examination spo<sub>2</sub> was found to be decreased (78 at room air) and vitals such as temperature was 101°F, BP was found to be normal. The patient described the history of exposure to a positive COVID-19 Patient one week back. The patient was taking medicines for fever and coughing since one week. but still the condition was worsening and the patient was unable to breathe.

**LAB INVESTIGATIONS**

INVESTIGATION DONE	FINDINGS (CURRENT RESULTS)	DAYS IN THE SYMPTOMS WERE DEVELOPED.
HRCT-Chest (High-resolution computed Tomography)	Multifocal small ill-defined ground-glass opacities and patchy consolidations in both lungs, more so in lower lobes in peripheral/subpleural locations- S/O viral pneumonia.	9th day after the development of COVID-19 symptoms.
Complete Blood Picture	blood picture was: Normocytic/Normochromic. WBC : Normal Platelet count: Adequate	9th day after the development of COVID-19 symptoms.
C- Reactive Protein	Test Value : 12, Positive. Normal value: > 6 IU/ml positive	9th day after the development of COVID-19 symptoms
IgG	positive	9th day after the development of COVID-19 symptoms
igM	Positive	9th day after the development of COVID-19 symptoms
D-Dimer	Observed value : 521.3 ng/ml normal value : < 500.0 ng/ml	11th day after the development of COVID-19 symptoms.
Serum creatinine	Observed value: 0.65 mg/dl normal range : 1.0-1.7	11th day after the development of COVID-19 symptoms.
serum ferritin	Observed value :398.5 ng/ml Normal range : 20-250 ng/ml	11th day after the development of COVID-19 symptoms.
ECG	Normal ECG	14th day after the development of Covid-19 symptoms.
Lipid profile test	serum cholesterol total, triglycerides, HDL, LDL, VLDL was found to be in normal range.	14th day after the development of COVID-19 symptoms.
Prothrombin Time	Citrate plasma test : Observed value ; 15.7 seconds Normal range : 10.5- 15.0 (coagulation) Citrate plasma control : 11.4 seconds Citrate plasma ISI : 1.10 seconds Citrate plasma INR: 1.4 seconds	14th day after the development of COVID-19 symptoms
Partial thromboplastin time (APTT)	Citrate plasma test Observed value : 41.6 seconds Normal range : 23.87-31.55 (coagulation) Citrate plasma control Observed value : 27.7 seconds (coagulation)	14th day after the development of COVID-19 symptoms

**DIFFERENTIAL DIAGNOSIS**

Upon physical examination the oxygen saturation was found to be decreased, along with that cough, wheezing sound while breathing, weakness, myalgia and fever was present. And depending upon the Chest CT scan Multifocal small ill defined ground glass opacities and

patchy consolidations in both lungs, more so in lower lobes in peripheral/subpleural locations was found. Based on the physical examination and Chest CT scan, igG and igM the patient was found to be diagnosed with viral pneumonia associated with COVID-19.

**TREATMENT GIVEN**

Patient came to the hospital on 9<sup>th</sup> day (after the development of COVID-19 symptoms)

DRUGS PRESCRIBED	DOSE	ROUTE OF ADMINISTRATION	FREQUENCY	DURATION
Cefuroxime.	500mg	Oral	Twice daily (after food)	7 days
Ambroxol hydrochloride.	30 mg	Oral	Thrice daily (after food)	10 days
Montelukast sodium and levocetirizine hydrochloride.	10 mg + 5 mg	Oral	Twice a day (after food)	20 days
Pantoprazole and domperidone.	20 mg	Oral	Twice a day (before	7 days

			food)	
Dexamethorphan hydrobromide and chlorpheniramine maleate syrup.	10 ml	Oral	Twice a day (after food)	7 days
Hydroxychloroquine.	400mg	Oral	Twice a day ( after food)	7 days
Doxycycline.	100mg	Oral	Twice a day (after food)	5 days
Acebrofylline and acetylcysteine	100mg+ 600 mg	Oral	Twice a day (after food)	5 days
Salbutamol respirator solution.		Nasal	Twice a day	5 days
Multivitamin, multimineral with grape seed extract.	1 tab	Oral	Once daily (at bed time)	20 days
B-complex with vitamin C.	1 tab	Oral	Once daily (after lunch)	20 days
Vitamin C	1 tab	Oral	Once daily (after lunch)	20 days

Pharmacologically patient was managed with antibiotics, antivirals, multivitamins, analgesics, along with this regular monitoring of oxygen was done, and oxygen therapy was also given to the patient at 5 L/min to reach SpO<sub>2</sub> targets of  $\geq 90\%$ , oxygen saturation was maintained at the range of 94-98. And blood sugar level monitoring was also done on a regular basis.

#### NON PHARMACOLOGICALLY PATIENT WAS FOLLOWING THESE STEPS

- ✓ Early morning exercise
- ✓ Intake of immunity-boosting supplement, i.e., impulse 30 ml twice a day before food
- ✓ Exposure to sunlight at least ½ hours a day, and fresh air intake, preferably in morning. Maintaining a healthy lifestyle.
- ✓ Daily intake of hot water steam twice a day, along with this hot water intake thrice daily.
- ✓ Intake of healthy foods, dry fruits, and fruits to build natural immunity to fight disease-causing viruses.
- ✓ Regularly monitoring of oxygen saturation, and maintaining a normal oxygen level.

#### OUTCOME AND FOLLOW UP

- ✓ Complete home isolation for 15 days.
- ✓ Regularly monitoring of oxygen level.
- ✓ Intake of immunity-boosting supplements.

#### DISCUSSION

Upon physical examination, the patient's oxygen saturation was decreased, based upon the chest CT scan, IgG and IgM patient was found to be diagnosed with Viral Pneumonia associated with COVID-19 and the patient was given Hydroxychloroquine. This drug have long-standing history in the prevention and treatment of malaria and also the treatment of systemic lupus erythematosus and rheumatoid arthritis. The mechanism of action of chloroquine and hydroxychloroquine is to block viral entry into cells by inhibiting Glycosylation of the host receptors, endosomal acidification, proteolytic processing. And the treatment was continued with the

antibiotic therapy, antiviral therapy, analgesics, and oxygen therapy which was a home-based management along with this, non pharmacologically the patient was given immunity-boosting supplements to fight against the disease. And complete home isolation for 15 days to prevent the transmission. The COVID-19 represents the greatest global public health and financial crisis of this generation, due to the increase in COVID-19 cases day by day there are insufficient beds in hospitals due to which, so many people are dying, thousands of lives are endangered.

#### CONCLUSION

Numerous preventative strategies and non-pharmaceutical interventions have been employed to mitigate the spread of disease including careful infection control, the isolation of patients, and social distancing. Management is predominantly focused on the provision of supportive care, with oxygen therapy representing the major treatment intervention. Medical therapy involving corticosteroids antivirals, and antibiotics have also been encouraged as part of critical management schemes. Despite the strategic implementation of these measures, the number of new reported cases continues to rise at a profoundly alarming rate. The main objective of this article is to decrease the fear of COVID-19 from the patients and to encourage the patients that successful home-based management is possible to overcome this pandemic.

#### REFERENCES

1. Noorush shifa nizami, et.al. Strong Immunity A Major weapon to fight against COVID-19. IOSR journal of pharmacy and biological sciences, e-ISSN:2278-3008, p-ISSN:2319-7676, may-june 2020; V[15], 3: 22-29.
2. WebMD what is viral pneumonia. <https://www.webmd.com/lung/viral-pneumonia>
3. chances of coronavirus spreading panache. magazine. <https://economictimes.indiatimes.com/magazines/panache/covid-19-transmission-guidebook-chances-of-coronavirus-spreading-through-tears-low/articleshow/74827681.cms>



4. D. Wang, B. Hu, C. Hu, *et al.* Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in wuhan, China. *J. Am. Med. Assoc.* (2020), 10.1001/jama.2020.1585.
5. Day by day symptoms MOH of Singapore last updated 26<sup>th</sup> march 2020.
6. Cynthia liu, qiongqiong zhou. *Et. al.* Research and Development on Therapeutic Agents and Vaccines for COVID-19 and Related Human Coronavirus Diseases. 12<sup>th</sup> march 2020.
7. Pamela Bailey. *et.al.* The importance of non-pharmacological interventions for the prevention of covid-19 transmission. July 2020. <https://isid.org/guide/pathogens/the-importance-of-non-pharmacologic-interventions-for-the-prevention-of-covid-19-transmission/suggestedpractice>
8. Juan A. Siordia jr. *epidemeology and clinical features of COVID-19: A Review Of Current Literature*, june 2020; 127: 104357.
9. M. Chung, A. Bernheim, X. Mei, *et al.* CT imaging features of 2019 novel coronavirus (2019-nCoV). *Radiology*, 2020; 295: 202-207.
10. Asmundson, G. J. G., & Taylor, S. (2020a). Coronaphobia: Fear and the 2019-nCoV outbreak. *Journal of Anxiety Disorders*, 70, 102196. <https://doi.org/10.1016/j.janxdis.2020.102196>
11. World Health Organization *Pocket Book of Hospital Care for Children: Guidelines for the Management of Common Childhood Illnesses* 2013.
12. World Health Organization *WHO Global Epidemiological Surveillance Standards for Influenza*(2014).
13. A. Rhodes, L.E. Evans, W. Alhazzani, *et al.* Surviving sepsis campaign: international guidelines for management of sepsis and septic shock. *Intensive Care Med.*, 2017; 43: 304-377. 2016.
14. H.Rosjo, M. Varpula, T.-A. Hagve, S. Karlsson, E. Ruokonen, V. Pettilä, T. Omland *Circulating high sensitivity troponin T in severe sepsis and septic shock: distribution, associated factors, and relation to outcome.* *Intensive Care Med.*, 2011; 37: 77-85.