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Case Study

Case Report Study of an Integrated Treatment Approach in Critical Case of COVID-19 Patient

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ABSTRACT

The world has seen various variants of coronavirus and attempting all the feasible options to combat this pandemic situation. By far, vaccination is the most remarkable approach in controlling the Pandemic. India is fighting against the delta variant of the second wave COVID-19. Meanwhile, World Health Organization has already warned about the initial stages of the third wave in all countries. Therefore, on considering the variants of coronavirus, no standard option of care is available to date. In this article, we present a case study on the clinical outcome of the integrated treatment approach in COVID-19 patients suffering from critical conditions. The patient with a history of coronavirus was advised of strict home quarantine and standard treatment of care for 14 days. She was brought to the COVID-19 healthcare center in an unconscious state by her family. On examination, she had a 79% oxygen saturation, heart rate 88 beats/minute and her laboratory findings: CRP 37.3(mg/dL), ESR 84(mm/hour), D-dimer 793(ng/mL), and RBS 158 mg/d. After receiving consent from her family members, we initiated the integrated treatment approach. It includes T-AYU-HM Premium 600mg, is a herbo-mineral formulation, and Acupen 600 mg thrice a day with modern medicines. By adhering to the treatment, she recovered completely within a one-month duration. Her HRCT report showed a significant reduction in lung involvement with ill-defined low-density ground-glass opacities and atelectatic bands in both lungs. The patient's vitals and laboratory parameters presented striking improvement. This case study provides information about the effect of the integrated treatment approach in critical COVID-19 cases.

INTRODUCTION

The world has now seen various variants of coronavirus and has been attempting all the possible options to combat this pandemic situation. India is fighting against the delta variant of the second wave, as it has affected the youth and children the most. World Health Organizations has already warned about the early stages of the third wave to all the nations. Vaccination has always been the most remarkable approach in controlling the Pandemic. Main preventive measures apart from vaccination involve wearing masks, washing hands, and social distancing, as the chances of a vaccine breakthrough infection are reasonable. An integrated treatment approach

might be an essential treatment against the variants of coronavirus.^[1-5]

The integrated treatment plan includes T-AYU-HM Premium, a novel anti-sickling herbo-mineral formulation. The T-AYU-HM Premium tablet (300 mg) contains herbs like *Zingiber officinale* (25 mg), *Terminalia chebula* (25 mg), *Asparagus racemosus* (25 mg), *Myristica fragrans* (25 mg), *Punica granatum* (12.5 mg), *Tinospora cordifolia* (37.5 mg), *Piper longum* (37.5 mg), *Leptadenia reticulata* (37.5 mg). The minerals are Calyx of Mica (25 mg), Calyx of iron (12.5 mg). The formulation was manufactured by ATBU Harita Pharmaceuticals Pvt. Ltd, Gujarat. The formulation's safety and effectiveness in coronavirus have

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been assessed in the registered Phase-II clinical trial. The case reports are documented, exploring the potential of this formulation in COVID-19.^[6-10]

Case Study

Here, we present a case study on the clinical outcome of the integrated treatment approach in a critical case of the COVID-19 patient recorded during the second wave of coronavirus infection in India.

Site Information

The case study was conducted at Dhanvantari Clinic, Ayurvedic Health Care and Research Center (COVID-19 Healthcare Centre) in Vyara, Gujarat, India. The COVID-19 healthcare center facilitated oxygen concentrators, high-flow oxygen masks, and a BIPAP device. The center has received service support from an ayurvedic physician and a modern medicine practitioner who have rendered outstanding contributions as corona warriors.

Patient Consent

The patient's family decided to admit her to the COVID-19 center and agreed to administer the integrated treatment approach. Prior consent was received to initiate the treatment and to share the case details like vitals, laboratory findings and treatment outcomes for research purposes.

Patient's Demographics Information

Mrs. Z is a 45-year-old woman living in the district- Tapi, Gujarat, India.

Patient's History

Before admission to COVID-19 care, the patient was diagnosed with COVID-19 and advised to follow the standard treatment plan and strict home quarantine.

Patient Current Status

The patient was presented at the Dhanvantari COVID-19 Healthcare Centre on 14th May, 2021 in an unconscious state. Physical examination showed her oxygen saturation was 79%, and her heart rate was 88 beats/minute. The patient was immediately started on oxygen support and nebulized to combat the hypoxia and regain consciousness. Once the patient regained consciousness and was stable, her RTPCR was performed and recorded a CT score of 24. A thorough hematological examination was conducted to assess the complete clinical profile of the patient. The clinical profile is mentioned here in Table 1.

The prime objectives were to restore consciousness and prevent further complications. The patient received oxygen at a rate of 5 L/minute for two hours as part of an integrated treatment plan that included continuous clinical profile monitoring. Integrated treatment with clinical improvement is mentioned in Table 2.

The hematological profile measurement on successive dates is mentioned in the following Table 3. The

parameters are monitored and advised based on the clinical requirement of the patient.

The 1-mm volumetric axial CT sections of the chest were taken using a high algorithm pre- and post-treatment to get a clear idea about the intensity of the infection in the lungs. The results of pre- and post-treatment HRCT-chest images are presented below in Table 4.

DISCUSSION

The patient symptomatically recovered completely within 30 days after the initiation of the integrated treatment. Compared to the segregated treatment of COVID-19 integrated treatment might be more effective in reducing mortality rates in patients with comorbidities and critical cases. The prime cause for mortality in critically ill patients might be progressive hypoxia and multiple organ dysfunctions. An advance in complications also raises the mortality rate.^[11]

Currently, it is a challenge to identify patients at high risk of developing acute respiratory distress syndrome or any other complications. The development of acute respiratory distress syndrome may lead to pulmonary and systemic inflammation. The patient on admission had decreased level of white blood cells and lymphocytes. In COVID-19, lymphopenia is a known possible factor linked to illness severity and mortality.^[12] As a result, damage to lymphocytes and immunologic abnormalities may be a significant component in patient exacerbations. Treatment of critically ill COVID-19 patients with existing comorbidities, especially in the elderly, is complicated. Decreased organ function, altered immunity, existing comorbidities, subjective symptoms, and varied imaging results are major obstacles in critically ill patients' management.^[11] With an integrated treatment approach, the admitted patient's oxygen requirement steadily improved over time, showing that hypoxia-induced

Table 1: Patient's clinical profile on the date of admission

Parameters	Values
Hemoglobin (mg/dL)	10.1
RBC (millions per mm ³)	4.24
WBC (per mm ³)	3600
Platelets (per mm ³)	358000
Neutrophils (%)	82
Lymphocytes (%)	17
ESR (mm/hour)	84
CRP (mg/dL)	37.3
D-Dimer (ng/mL)	793
S.LDH (U/L)	405.6
RBS (mg/dL)	158.5
Blood pressure (mmHg)	147/88
Spo2 (%)	79

Table 2: Integrated treatment

Date	Presentation	Supportive measures	Parental	Ayurvedic medicines	Modern medicines
14/05/2021	<ul style="list-style-type: none"> Unconscious Difficulty in Breathing Fever Fatigue Cough 	<ul style="list-style-type: none"> Oxygen 5 L/minute per 2 hour Duolin 3 mL and Budecort 2 mL Nebulisation 	<ul style="list-style-type: none"> Inj. LMWH 40 mg SC OD Inj. Dexa 4 mg IM OD 	<ul style="list-style-type: none"> Tab. T-AYU-HM Premium 600 mg PO TDS x 7 days Tab. Acupen 600 PO TDS x 7 days 	<ul style="list-style-type: none"> Tab. levocet M PO BD x7 days Tab. Rantac-D PO BD x7 days Tab. Wysolone-10 mg PO BD x 7 days Tab. Cefodoxime-200 mg PO BD x 7 days
15/05/2021	<ul style="list-style-type: none"> Difficulty in Breathing Fatigue Cough 	<ul style="list-style-type: none"> Oxygen 5 L/minute per 2 hour Duolin 3 mL and Budecort 2 mL Nebulisation 	<ul style="list-style-type: none"> Inj. LMWH 40 mg SC OD Inj. Dexa 4 mg IM OD 		
16/05/2021	<ul style="list-style-type: none"> Difficulty in Breathing Fatigue Cough 	<ul style="list-style-type: none"> Oxygen 5 L/minute per 2 hour Duolin 3 mL and Budecort 2 mL Nebulisation 	<ul style="list-style-type: none"> Inj. LMWH 40 mg SC OD Inj. Dexa 4mg IM OD 		
20/05/2021	<ul style="list-style-type: none"> Difficulty in Breathing Fatigue Cough 	<ul style="list-style-type: none"> Duolin 3 mL and Budecort 2 mL Nebulisation 		<ul style="list-style-type: none"> Tab. T-AYU-HM Premium 600 mg PO BD x 5 days Tab. Acupen 600 mg PO BD x 5 days 	<ul style="list-style-type: none"> Tab. Azithral PO OD x 5 Days Cap. Rabinat DSR PO BD x 5 Days Cap. Clopilet A 75 mg PO OD x 7 days Tab. Wysolone PO OD x 7 days Tab. levocet M PO BD x 7 days Syrup Ascozen PO 10 mL BD x 7 days
26/05/2021	<ul style="list-style-type: none"> Fatigue 			<ul style="list-style-type: none"> Tab. T-AYU-HM Premium 600 mg PO BD x20 days 	
14/06/2021	<ul style="list-style-type: none"> Fatigue 			<ul style="list-style-type: none"> Tab. T-AYU-HM Premium 600 mg PO BD x 15 days 	

Note: Duolin Respule 3 mL (Ipratropium bromide 500 mcg + levosalbutamol 1.25 mg), Budecortrespule 2 mL (Budesonide 0.5 mg), LMWH 40 mg (Enoxaparin), Dexa 4 mg (dexamethasone), Levocet M (Levocetirizine 5 mg + Montelukast 10 mg), Eupod 200 (Cefpodoxime 200 mg), Rabinat DSR (Domperidone 30 mg + Rabeprazole 20 mg), Wysolone 10 (Prednisolone 10 mg), Clopilet A 75 (aspirin 75 mg + clopidogrel 75 mg), Azithral 500 (azithromycin 500 mg), Ascozen (Bromhexine 4 mg + Guaifenesin 50 mg + Terbutaline 1.5 mg/50 mL).

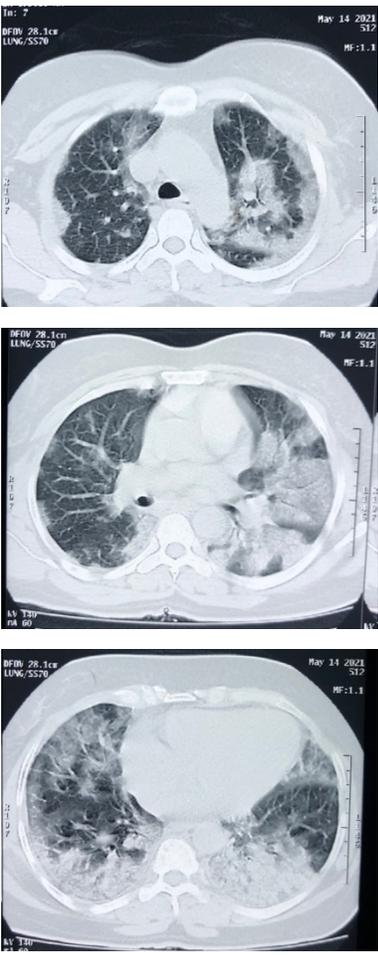
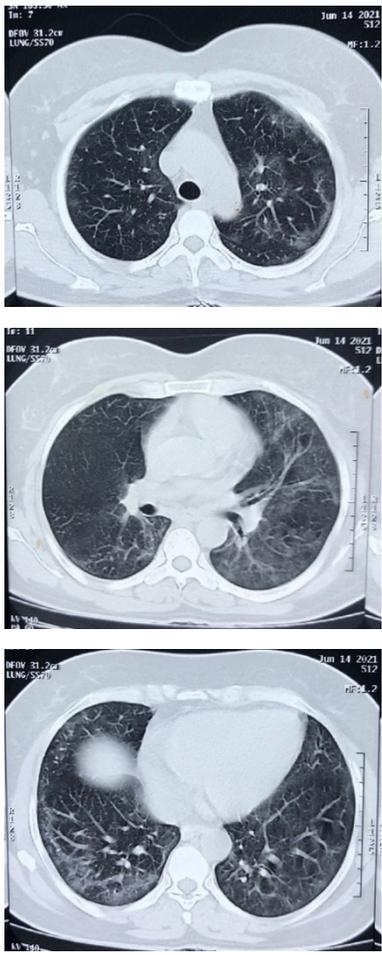
Table 3: Laboratory profile of patients during treatment

Parameters	20/05/2021	26/5/2021	14/06/21
Hemoglobin (mg/dL)	11.3	10.3	10.8
RBC (millions per mm ³)	4.66	4.49	4.64
WBC (per mm ³)	9000	7400	5600
Platelets (per mm ³)	354000	286000	287000
Neutrophils (%)	81	74	64
Lymphocytes (%)	16	21	33
ESR (mm/hour)	18	24	24
CRP (mg/dL)	3.9	0.4	0.3
RBS (md/dL)	264.7	362	210
HbA1C	11.3	-	9.0
Blood pressure (mmHg)	124/83	112/74	110/93
Spo2 (%)	86	94	98

problems have not advanced any further. Therapeutic dosing of low molecular weight heparin and low dose dexamethasone proved to lower mortality in severe COVID-19 patients in a recent study.^[13,14] COVID-19 affects the lungs both structurally and functionally, monitored during the study through HRCT Chest. A CT score of 18 or more is related closely to increased mortality in COVID-19 patients in a recent study.^[15] Before treatment, the CT chest with a CT score of 19 showed multiple large ill-defined ground-glass opacities with crazy paving patterns contributed by factors like inflammatory infiltrates, edema or hemorrhaging. Also, higher D-Dimer levels are closely associated with pulmonary embolism, which might be responsible for the ground glass opacities on chest CT.^[16,17] After treatment, a significant reduction in lung involvement was noted with ill-defined low-density ground-glass opacities. Previous studies have reported



Table 4: HRCT chest images of the patient pre-treatment and post-treatment.

Parameters	14 May 2021	14 June 2021
1 mm volumetric axial CT sections of the chest		
Ground Glass Opacities	Multiple large ill-defined ground glass opacities with crazy-paving pattern.	Multiple ill-defined low density ground glass opacities.
Location	Both upper lobes, right middle and both lower lobes.	Both upper lobes, right middle and both lower lobes.
Distribution	Peripheral and central, predominantly peripheral in both lungs.	Peripheral and central, predominantly peripheral in both lungs.
Involvement	60-70% lungs affected.	30-40% lungs affected.
Other Findings	Associated interlobular septal thickening is noted.	Associated interlobular septal thickening is noted. Multiple linear atelectatic bands are seen in both lungs.
Impression	Multiple large ill-defined ground-glass opacities in both the lungs (60-70% involvement of lungs on visual estimation) CT Severity Index: 19/25 These findings are highly suggestive of Viral Pneumonia-COVID 19 Pattern (CO-RADS 5)	As compared to the previous CT scan dated 14 May 2021 Significant reduction in lung involvement with ill-defined low-density ground-glass opacities and atelectatic bands in both lungs. (30-40% involvement of lungs on visual estimation) These findings are highly suggestive of Resolving Viral Pneumonia – COVID 19 Pattern (CO-RADS 5)

that ARDS-associated mortality chances are more in patients who are critically ill or elderly or have existing comorbidities.

CONCLUSION

The patient did not present any untoward reactions during the treatment timeline. The patient elevated

blood glucose level was reduced to the normal range and sustained within the normal range, which suggested that the complications associated with glucose didn't develop. The integrated treatment approach in the COVID-19 patient presented a remarkable effect on the inflammatory markers like CRP, ESR, and LDH. The oxygen saturation improved with time, along with the reduction in the

heart rate. The success of the integrated treatment in the COVID-19 patient is apparent in that the patient recovered from the symptoms and, hematological profiles showed an observational improvement.

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