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Case Study

Effectiveness Report of T-AYU-HM Premium and Onion Vaporisation on Corona Positive Sick Cell Anemia Patients: A Case Study

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ABSTRACT

Coronavirus increases mortality in patients with comorbidities like diabetes, hypertension, cancer, hemoglobin disorders. The entry of coronavirus in sickle cell anemia patients demands a personalized medical management strategy because, to date, a standard cure is not available for both illnesses. Coronavirus infection causes damage to alveoli leading to an impaired oxygen exchange, which might result in the sickling of red blood corpuscles inducing various complications in patients with sickle cell anemia. Management of sickle cell patients infected with coronavirus has presented with a challenge in the current situation. A case report discusses here is of 2 sickle cell anemia patients with positive Covid-19 test who came to the clinic seeking treatment. With prior consent, we advised T-AYU-HM Premium and Onion vaporization treatment for 21 days. We observed remarkable clinical improvement in patients' hemoglobin, RBC, ESR and CRP profiles during followed up visit. The formulation's impact on red blood corpuscles helps in preventing vaso-occlusive crisis and thereby the requirement of hospitalization. The patients' clinical recovery was observed without supportive medications commonly required in patients of sickle cell and coronavirus infection. This case report study provides information on the role of an alternative medicine system in comorbidities in patients infected with coronavirus across the country. This therapeutic approach might open a door for economical, safe, and effective management options for sickle cell anemia patients infected with coronavirus in the future.

INTRODUCTION

Coronavirus demands no more detailed introduction for researchers in the current pandemic situation. Researchers are now emphasizing the development of symptomatic therapeutic guidelines on coronavirus's impact on various comorbidities. Previously reported researches mentioned that clinical features of coronavirus infection include sore throat, coughing, fever, loss of taste sensation, and in severe cases, it may lead to alveolar damage, Pneumonia and acute respiratory distress syndrome. These suggest that clinical profile can be heterogeneous in patients of coronavirus infection.^[1-4]

Sickle cell anemia is an autosomal recessive disorder that limits the affinity of hemoglobin towards oxygen. In sickle

cell anemia, pathogenesis and clinical complications are well-studied, but the management options always remain challenging, mostly symptomatic and limited.^[5] Sickle cell anemia patients are susceptible to infection from coronavirus because the virus's entry site in alveoli suggested it might trigger acute chest syndrome or vaso-occlusive crisis in sickle cell patients. Hypercoagulation is a common clinical parameter in sickle cell anemia and coronavirus infection.^[6-10] Studies have reported that red blood corpuscles play a central role in an immune reaction and cellular defense. The red blood corpuscles help in the binding pathogen from the tissue site and thereby decreasing the viral load.^[11] Previous studies have also documented the interaction of the virus with hemoglobin through ACE2, CD147, CD26, and other

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Table 1: Clinical Profile of Mr. Y

Investigation (Mr. Y)	Prior Records	Day 1	Day 5	Day 10	Day 21
Hb (gm/dl)	9.1	6.0	6.7	9.5	9
RBC(in millions)	3.7	2.29	2.36	3.65	3.98
WBC(per microlitre)	6800	17000	24600	6300	10900
Platelets (per microlitre)	380000	142000	242000	765000	594000
ESR (mm/hr)	20	20	16		26
CRP (mg/l)	32	29.1	23.6	23.5	14.2
D-dimer (ng/ml)	-	-	-	-	-
B.P (mmHg)	100/70	100/78			
BT	97.3	97.3	97.3	97.3	97.4
SpO2 (%)	99	97	96	97	97
PR (in minutes)	112	89	125	115	111
Weight (in kg)	56.700	53.50	53.200	52.700	53.900

receptors located on red blood corpuscles and blood cell precursors.^[12-14] Free radical released from leucocytes, hypoxia, cytokine storm generally inhibit nitric oxide and allows adhesion of red blood corpuscles during acute chest syndrome in sickle cell anemia.^[15-17]

The entry of coronavirus into the patient of sickle cell anemia may demand more attention to prevent mortality. There is a limited management option for sickle cell anemia like hydroxyurea, which might not be suitable due to its myelosuppressive nature in coronavirus infection. Blood transfusion also required medical monitoring and blood sample analysis.^[18] Therefore the management of sickle cell patients infected with coronavirus becomes more complicated and requires a personalized treatment approach.

T-AYU-HM Premium is a novel formulation from an alternative system of medicine for sickle cell anemia. An onion a vegetable used in regular meal possess potent antiviral activity.^[19,20] This combination might be more valuable for sickle cell patients infected with the coronavirus.

CASE REPORT

The case report discussed here is on coronavirus infection in sickle cell anemia patients. After thorough discussion and receiving prior consent for the utilization of data, the case study progressed to obtain more information for the betterment of the community in the future.

The case study includes two family members, who reported at Dhanvantari Clinic, Ayurvedic Health Care and Research Centre, Vyara, Gujarat-India. Mr. Y 26-year-old male, and Ms. Z 27-year-old female with a prior history of sickle cell disease, now infected by the coronavirus. They acquired the coronavirus infection from their Father, Mr. X, who is a 47-year-old police officer suffering from sickle cell trait. The entire family has an "O" positive blood group.

Mr. Y, with no travelling history was hospitalized prior to presentation at the clinic with complaints of headache, weakness, breathlessness, and chest pain. Clinical

Table 2: Clinical Profile of Ms. Z

Investigation (Ms. Z)	Day 1	Day 14	Day 30
Hb (gm/dl)	7.6	7.5	8.1
RBC(in millions)	3.1	3.1	3.30
WBC(per micro litre)	11600	10300	11000
Platelets(per micro litre)	516000	813000	565000
ESR(mm/hr)	56	28	42
CRP(mg/l)	16.1	8.4	2.9
D-dimer (ng/ml)	1110	1290	342.2
BT	97.8	97.5	97.5
SpO2 (%)	97	96	97
PR (in minutes)	81	93	97
Weight(in kg)	59.600	59.600	60.120

parameters examined at the hospital are also mentioned in the case study in order to gain a detailed idea about his history. On further examination and laboratory evaluation, his RTPCR was Positive. The other family members like Mr. X and Ms. Z were also advised to get tested for Covid-19 and found RTPCR - Positive. Ms. Z is a regular patient at our clinic for sickle cell anemia and has been taking T-AYU-HM Premium.

We advised tablet T-AYU-HM premium 600mg twice a day orally, Onion vaporization twice a day nasally for 2 minutes and home quarantine for a period of 21 days. For any further medical assistance, the consultant remained in contact with them and regular follow-ups for the pain episodes, BP, SpO2 monitoring and other clinical observational parameters for safety were maintained. Clinical parameters examined on the baseline day and follow-ups visits, are mentioned in the following Tables 1 and 2, respectively.

RESULT AND DISCUSSION

Sickle cell anemia and Coronavirus infection both become severe if the oxygen level is impaired in patients. Covid-19



causes hyper inflammation of the lungs, which impairs the gaseous exchange system through the alveolar membrane. These lead to reduced oxygen diffusion into the pulmonary capillaries, which render our body into a hypoxic state.^[19] The three crucial triggers for the sickling of the RBCs in patients with sickle cell anemia are hypoxia, dehydration and infection.

The results of cases suggested that there was a marked improvement in hemoglobin and red blood corpuscles count in patients. The formulation also manages to sustain hemoglobin level in a range where it will not produce viscosity-related complications in sickle cell disease patients.^[20] T-AYU-HM Premium by improving the RBCs' oxygen-carrying capacity and maintaining the integrity of the RBC membrane, does not allow sickle hemoglobin to polymerise and form sickle cells.^[21] Reducing the sickling of the RBCs improves the coagulability state of the vascular system and retrieves the body from a hypercoagulable state into a normal vascular state, demonstrated by a drastic reduction in the D-Dimer levels.^[22-23]

It further helps by reducing inflammatory cytokines and the hyper inflammation in lungs noted by reduced levels of CRP, ESR and Neutrophil lymphocyte ratios; all of these being inflammatory markers.^[22-24] This enhances the gaseous diffusion at the alveoli and improves the patients' breathing symptoms.

Sickle cell anemia is affecting millions of people across the globe, like America, UK, India.^[25-27] In 2009, increased susceptibility of sickle cell disease children towards H1N1 influenza causing severe respiratory complications and hospital admission was already documented.^[28] Limited information for symptoms and complications in sickle cell patients infected with Covid-19 is available. Blood transfusion, antiviral drugs effectiveness, fluid balance, hydroxyurea's effectiveness, the impact of Covid-19 on sickle cell trait, and sickle cell disease are some of the concerns that still require more detailed explanation.^[29] There are a number of alternative medicine system trials in the management of corona virus infection, but most of them are restricted to mild and moderate level cases. The roles of an alternative system of medicine in patients of coronavirus having comorbidities are more anticipated to be documented. The treatment with T-AYU-HM Premium and onion vaporization prevented the need for blood transfusion or hospitalization for patients.

CONCLUSION

Patients of sickle cell anemia infected with coronavirus during our 21 days observation period presented remarkable improvement without any requirement for blood transfusion or hospitalization. The treatment of T-AYU-HM Premium and Onion vaporization prevent vaso-occlusive events and provide pain relief. A further clinical study might be required to establish the efficacy of T-AYU-HM Premium and Onion vaporization in sickle cell anemia patients infected by the coronavirus.

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ABBREVIATIONS

RTPCR- Reverse transcription-polymerase chain reaction, CRP- C-reactive Protein, ESR- erythrocyte Sedimentation Rate, SpO₂-Oxygen Saturation, ACE2- angiotensin-converting enzyme 2, CD147- cluster of differentiation 147/ (Basigin), CD26-Cluster of differentiation 26.

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