



**ORIGINAL RESEARCH PAPER**

**Medical Science**

**STEM CELLS AS A COMPASSIONATE MODALITY ADOPTED FOR ARDS PATIENTS DURING COVID 19 INFECTION**

**KEY WORDS:** Contagious ; SARS-CoV-2; Autologous; Stemcells; Inflammation; ARDS

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**ABSTRACT**

Covid 19 is a contagious disease .It is caused by virus SARS\_CoV-2.It is air borne infection from which the symptoms vary from mild to fatal. Autologous stem cells play an important role in curbing the inflammation which is the contributing factor for ARDS So that the patient may be saved from mortality.

**INTRODUCTION**

Covid-19 is a contagious illness which is caused by SARS-CoV-2.

It is dreadful viral illness which is regarded as airborne spread. Carona virus genome is enveloped which contain 4 structural proteins named nucleocapsid ;Spike;Membrane; Envelope .The nucleocapsid coats the genome.Spike and envelope proteins are embedded in the lipid envelope. .It is having positive sense single stranded RNA genome. Bound to the sting of RNA are nucleoproteins that helps to give the virus its structure. And enable it to replicate.

Encapsulating RNA genome is teal which protects virus from host environment. outer envelope is made of lipid layer. This gives protection to precious genetic cargo .This layers anchors the different structural proteins needed by virus to infect the cell. The bulbous proteins seen outside the carona virus are Spike proteins This looks like Peplomer spikes resembles solar carona .So it is named as carona virus .The spike proteins act as grappling hook that allows the virus to latch onto host cells and crack them open for infection. The spike proteins Initialise The infection By binding to the Human angiotensin converting enzyme2. Then the SARS-CoV-2 Enters the host cell And reproduces more viruses Which are later released To infect numerous cells. The pathogenesis of COVID 19 Include replication of Virus in early phase of illness And dis regulatory inflammatory and Immune response to COVID-19 virus That leads to systemic damage In later phase of disease. So it has become very difficult to retrieve some patients who has developed ARDS. So Stem cell transplantation is the only modality which can help the patients to prevent their mortality by curbing the inflammation

We followed Helenski declaration Protocall and we used autologous stem cells obtained from patients bone marrow and retrieved stemcells

Stemcells are the small mononuclear cells which are undifferentiated which possess the following fundamental properties such as self renewal and differentiation. Trandifferentiation and developmental plasticity are the main characteristic feature of stem cells. They are classified into multipotent; Pluripotent; Totipotent; Unipotent cells based on their differentiation into lineages. Covid 19 virus enters the pulmonary Alveolar epithelial cells And the viral contents are increased inside the cell. Now inside the host cell the virus undergoes Replication A formation of negative strand RNA by preexisting through single strand Positive RNA Through RNA polymerase activity which is called transcription process .Then the bone marrow derived stemcell transplantation was explained to the patient and their families took their consent and obtained ethics committee approval to proceed with the autologous bone marrow transplantation for 10 patients .Before doing the procedure the inflammatory markers were investigated for these 10 patients and found to be in abnormal ranges .so The Peripheral blood smear examination was done to rule out haematological malignancies and haematological disorders. Peripheral blood smear examined by pathologist revealed there is no haematological malignancies and haematological disorders .so we have decided to go ahead with autologous bone marrow derived stemcell transplantation for those 10 patients .

For all the patients 40ml of bonemarrow was aspirated from posterior illiac crest subjecting them under local anaesthesia under sterile conditions and was shifted to stemcell laboratory located in the hospital premises under strict Aseptic conditions .Stem cells were retrieved under strict

**Research Methodology**

aseptic conditions and were given to the respective patients their autologous stemcells intravenously. Followed their inflammatory markers such as NLR Ratio; serum Ferritin levels; CRP levels; ESR; for 20 days on a regular basis .all the 10 patient's inflammatory markers were drastically got reduced to upper normal limits and 4 patients survived and 6 patients died not due to systemic inflammation but due to comorbid conditions such as MI ;CVA .As Stemcells are having immunomodulatory Properties that can curb inflammation

**RESULTS & CONCLUSION**

Stemcells that possess immunomodulation when given to patients infected with SARS-CoV-2 have shown beneficial effect to curb the effect of covid -19 as the systemic inflammation induced by SARS-CoV-2 was curbed to large extent as there is drastically decrease in inflammatory markers levels in patients affected with SARS-CoV-2. with this small sample size we cannot determine the statistical significance .

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