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Awareness about convalescent plasma therapy in managing covid-19 among dental students

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ABSTRACT

A coronavirus is indeed a group of viruses which inflict a variety of dangerous human diseases including the common cold and far more extreme types such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). The medical emergency caused due to SARS-CoV-2 coronavirus (COVID-19) throughout the city of Wuhan, China, is now a pandemic that has spread to nearly 200 countries. Over several million people globally were already diagnosed with the new coronavirus SARS-CoV-2. This survey was performed for assessing the awareness about convalescent plasma therapy in managing COVID-19 amongst dental students. A questionnaire oriented cross-sectional type of survey was done in a group comprising 100 dental college students in Chennai. A self-designed questionnaire contains 10 questions based on the knowledge and awareness about Convalescent Plasma therapy among dental college students. Questionnaires were circulated through an online website survey planet. The questions explored the awareness of Convalescent Plasma therapy, indications, contraindications, mechanism of action and side effects. After the responses were received from 100 participants, data were collected and analyzed. 9% are aware of Convalescent Plasma therapy. 15% are aware of the mechanism of action of Convalescent Plasma therapy. 15% are aware of the indications of Convalescent Plasma therapy. 13% are aware of the contraindications of Convalescent Plasma therapy. 11% are aware of the side effects of Convalescent Plasma therapy. The awareness about convalescent plasma therapy was less among dental students. Increased awareness and educational programs should be initiated to spread knowledge about plasma therapy.

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INTRODUCTION

A coronavirus is indeed a group of viruses which inflict a variety of dangerous human diseases including the common cold and far more extreme types such as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). The medical emergency caused due to SARS-CoV-2 coronavirus (COVID-19) throughout the city of Wuhan, China, is now a pandemic that has spread to nearly 200 countries. Over several million people globally were already diagnosed with the new coronavirus SARS-CoV-2. The most identified severe infection caused by coronavirus originated with the

2003 SARS scourge in China (Guo *et al.*, 2020; Paules *et al.*, 2020). The second episode of severe illness originated in 2012 in Saudi Arabia as MERS (Abdirizak *et al.*, 2019; Chowell *et al.*, 2015). The third episode of lethal illness triggered by SARS-CoV-2 coronavirus (COVID-19) that arose in Wuhan, China, became a global epidemic and extended to more than 200 nations (Moghadas *et al.*, 2017; Tariq *et al.*, 2020).

More than one million people in the world were already infected with SARS-CoV-2 coronavirus. In any case, 75, 900 and more than one passes have been confirmed since 07 April 2020. Altogether, 36 million people have been affected. Consistently, the figures have risen, with the United States having the most serious positive cases on the globe. Italy, England and Spain tend to be the most dominant countries in Europe, with more than 16,000, 13,000, 1000 and 8,000 going by on a stand-alone basis until 7 April 2020 (Abdirizak *et al.*, 2019). Antimalarial drug hydroxychloroquine has been used as a treatment alternative for COVID-19. A limited sample size non-randomized trial from France showed that hydroxychloroquine, in conjunction to azithromycin therapy, decreased the viral burden in COVID-19 cases (Gautret *et al.*, 2020; Molina *et al.*, 2020). After this investigation, another French study found that hydroxychloroquine, in combination with azithromycin, did not have a significant antiviral movement is badly affected, COVID-19 patients (Ponscarme *et al.*, 2014).

Clinical reports in China suggest that hydroxychloroquine mitigated the risk of severe illness in COVID-19 patients (Manzo, 2020; Liu and Liu, 2020). Hydroxychloroquine is extremely toxic in overdose, leading to a rapid onset of venomous sensory system seizures and trances like states and cardiovascular distress (Guastalegname and Vallone, 2020). Hydroxychloroquine gained permission for crisis use from FDA as of 3 April 2020, and there is still a huge amount of work to be done on optimal dosages and medicines for COVID-19.

Coronavirus virions are circular shaped with 125 nm diameter as discovered by cryoelectron tomography and cryoelectron microscopy (Lian *et al.*, 2020). The crown viral genes encode four major auxiliary proteins to be unique to surface spike (S) glycoprotein, film protein (M), small envelope glycoprotein (E), as well as nucleocapsid (N) protein. These proteins are needed to create a complete viral particle structure labelled virion (Jiangshan *et al.*, 2020). The spike protein is 180KD of glycoprotein and is present around the outside of the virus. This is necessary for coronavirus segment of invading the host cell. It includes two subunits to all be S1and S2 specific. The S1 subunit bind to receptor around the outside of the target cells, while the S2 subunit intercedes with the cell film combination (Cancarevic *et al.*, 2020).

Significant work has centered on the identification of neutralizing atoms based on spike proteins interaction with viral movement, and their capacity to actuate healthy reactions and trigger protective counteracting responses in infected people. Convalescent plasma therapy can indeed be considered being one of the best methods to monitor the SARS CoV-2 pandemic. This survey was performed for assessing the awareness about convalescent plasma therapy in managing COVID-19 amongst dental students.

MATERIALS AND METHODS

A questionnaire oriented cross-sectional type of survey was done in a group comprising 100 dental college students in Chennai. A self-designed questionnaire contains 10 questions based on the knowledge and awareness about Convalescent Plasma therapy among dental college students. Questionnaires were circulated through an online website survey planet. The questions explored the awareness of Convalescent Plasma therapy, indications, contraindications, mechanism of action and side effects. After the responses were received from 100 participants, data were collected and analyzed.

RESULTS

9% are aware of Convalescent Plasma therapy Figure 1. 15% are aware of the mechanism of action of Convalescent Plasma therapy Figure 2. 15% are aware of the indications of Convalescent Plasma therapy Figure 3. 13% are aware of the contraindications of Convalescent Plasma therapy Figure 4. 11% are aware of the side effects of Convalescent Plasma therapy Figure 5.

DISCUSSION

Convalescent plasma therapy is a 10-year-old technique that was used in the mid-1930s and is a straightforward theory. The serum is separated from the blood of a recovered patient from viral infection. The serum containing antigen produced antibodies has been injected into a recently infected person to engage the antigen assault. Antibodies that are formed by the B cells of an adaptive immune environment. They can bind to antigen existing on a pathogen which assaults the human system and effectively kills or activates an insusceptible

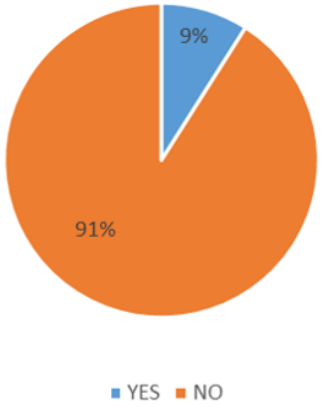

Figure 1: Awareness of Convalescent Plasma therapy

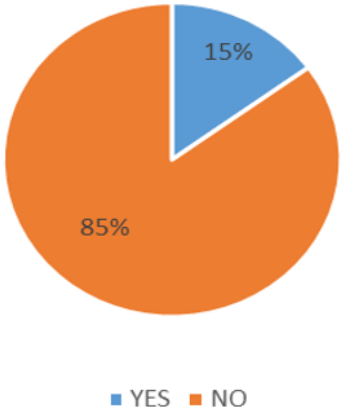

Figure 2: Awareness of mechanism of Convalescent Plasma therapy

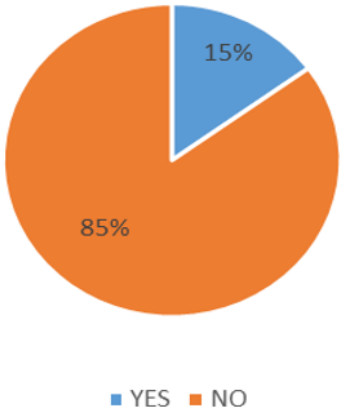

Figure 3: Awareness of indications of Convalescent Plasma therapy

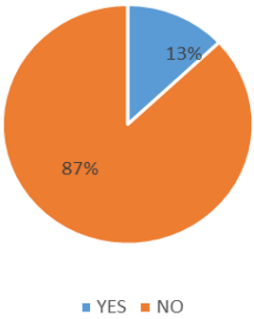

Figure 4: Awareness of contraindications of Convalescent Plasma therapy

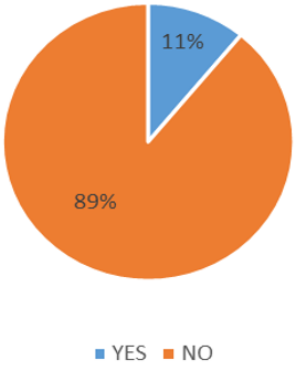

Figure 5: Awareness of side effects of Convalescent Plasma therapy

response (Suwanwongse and Shabarek, 2020).

In the context of prior evaluations and studies of challenging specific coronaviruses, like SARS and MERS, early plasma convalescent organization in patients with elevated antibodies dampen the mortality due to disease. Shen et al. has shown that transfusion of convalescent plasma can be beneficial for the treatment of essentially ill persons with SARS-CoV-2. Following ethical approval, Shenzhen, Third People's Hospital, five patients with SARS CoV-2 were given convalescent plasma containing fighting antibodies. All patients were released from the clinic under incubation time of 37 days (Arabi *et al.*, 2015; Ghamdi *et al.*, 2016; Suwanwongse and Shabarek, 2020).

Casadevall and Pirofski defined the hazards of passive treatment of convalescent serum, which comes under two classifications: serum disease and the antibody-subordinate disease enhancement. Serum disease is linked to the transmission of other blood diseases, while antibody-subordinate enhancement is a hypothetical concern with antibodies with one form of coronavirus may increase infection to some other viral strain (Bloch *et al.*, 2020; Casadevall and anne Pirofski, 2020).

Eventually, it is vital to recognize the human monoclonal antibody that destroys SARS-CoV-2. Such antibodies will concentrate on the common epitope of these infections and give the potential for detection and cure of COVID-19 (Casadevall *et al.*, 2020). Dental students were not aware of Convalescent Plasma therapy, its causes, contraindications, mode of action and side effects in COVID-19 management. Appropriate steps to raise knowledge and understanding of convalescent plasma therapy should also be implemented.

CONCLUSION

The awareness about convalescent plasma therapy in managing COVID-19 was less among dental students. Increased awareness and educational programs should be initiated to spread knowledge about plasma therapy.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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