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How Popular Is Covid 19 Convalscent Plasma. A Six Month Observational Study at Covid 19 Dedicated Center.

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Abstract:
INTRODUCTION: The novel corona virus disease 19 is Pandora box of trouble since it came into existence. Corona virus is still a mystery which need to be solved and every factor and its association is important since it aid in reaching the goal. Convalescent plasma therapy is one of the modality for treatment in only handful available options. Blood bank plays an important role in plasma therapy from donation to issue i.e. vein to vein and hence should be prepared for such situations. Here, based on the requisition received in department of transfusion medicine for convalescent plasma we have classified them in ABO system.
Aim: Aim of the present study was to evaluate the demand of convalescent plasma and correlating it with their blood group type.
Material and method: A retrospective study of total requisition received for convalescent plasma was evaluated according to the blood group for a period of six month July 2020 to December 2020 in department of transfusion medicine and blood bank A.I.I.M.S Patna. Here, based on the requisition received for convalescent plasma we have compared them in ABO blood group system. Total 978 requisitions were taken into consideration.
Result: Total of 979 requisitions was received for a period of 6 month from July 2020 to December 2020. On further analysis it was classified according to ABO blood group system. According to the observational study most common convalescent plasma requisition was received for blood group B+ 406 followed by o+ 296 and A+ 209 respectively. Least common blood group for convalescent plasma was AB + 67. Requisition for Rh negative group was evaluated A – was least common only 2 requisitions. Requisitions for AB - was three while for blood group O – and B – was same 5, 5 requisitions for each.
Conclusion: Present observational study suggest that though requisition for all blood group was received for COVID 19 convalescent plasma in blood bank, however most commonly asked group was B+ followed by O +, while least group was AB+. Blood bank should be prepared accordingly with priority to counsel and motivate the plasma donors. However, much more study is needed to explore all the probability.

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I. Introduction:

The 2019 corona virus disease (COVID-19) is caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), which first broke out in Wuhan, China, at the end of December 2019 [1]. On March 11, 2020, the World Health Organization declared COVID-19 infection a global pandemic[2] .The rapid global spread of the novel corona virus SARS-CoV-2 has strained healthcare and testing resources. A number of risk factors for COVID-19 morbidity and mortality are known, including age, sex, smoking, hypertension, diabetes, and chronic cardiovascular and respiratory diseases**,** adding to it, ABO blood group association is also been linked with[3]. The virus is mystery for whole world and hence treatment option is very less. Meanwhile plasma therapy was hope and was practiced as part of treatment protocol. Blood bank of AIIMS PATNA actively participated in plasma therapy. In a span of six month blood bank received total of 998 requisitions for convalescent plasma transfusion. Here in this study we categorized the requisition for COVID 19 plasma according to their blood group.

Aim:
To evaluate the demand of total COVID 19 convalescent plasma received in blood bank and categorize them according to ABO blood group system.

II. Material And Method:

This retrospective observational study was conducted in COVID 19 dedicated centers AIIMS Patna. All the data were collected from department of blood bank and transfusion medicine between periods of July 2020 to December 2020. Here, based on the requisition received for convalescent plasma we have categorized them in ABO blood grouping system**.**

Statics:

All the data were analyzed manually.

III. Result:

Total of 994 requisitions was received for a period of 6 month from July 2020 to December 2020. On further analysis it was classified according to ABO blood group system. According to the observational study most common convalescent plasma requisition was received for blood group B+ 406 followed by o+ 296 and A+ 209 respectively. Least common blood group for convalescent plasma was AB + 67. Requisition for Rh negative group was evaluated A – was least common only 2 requisitions. Requisitions for AB - was 3 while for blood group O – and B – was same 5, 5 requisitions for each. If we compare share holding of all the blood group together, blood group A was having 21% while blood group B and O was having 42% and 30% respectively. Least percentage was shared by blood group AB I.e. 7%. Total positive group requisition was 979 while for those of negative group were 15.

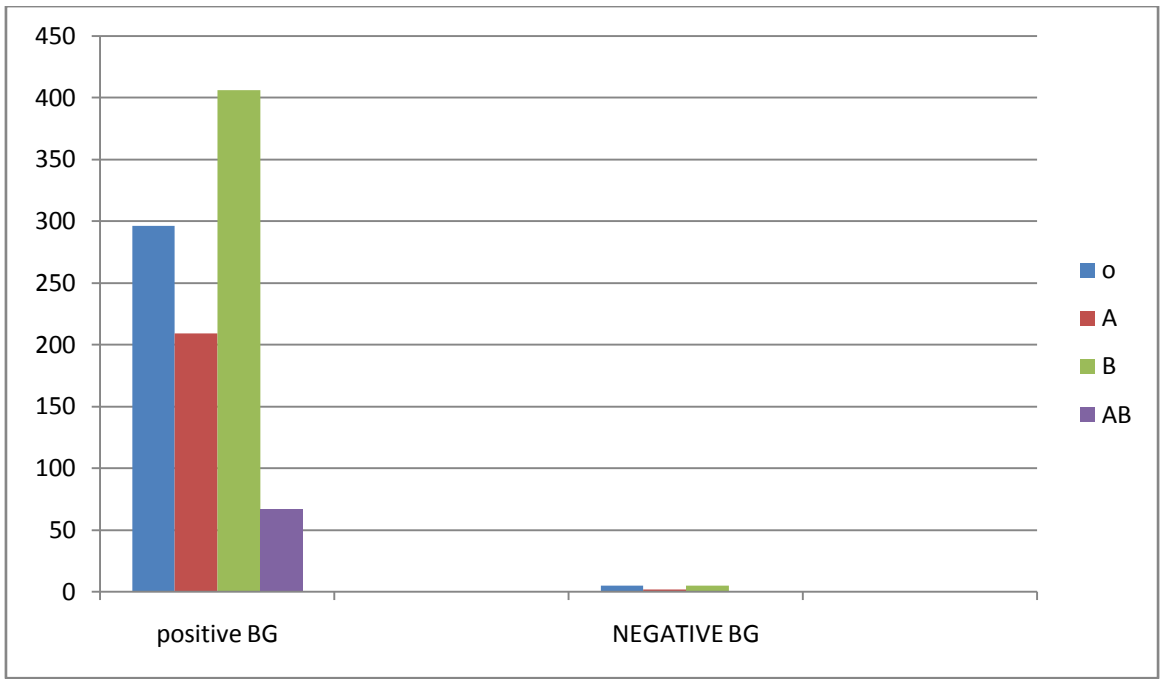

TABLE 1. The above given diagram represent blood group wise requisitions for COVID 19 convalescent plasma.

BLOOD GROUP	**O+**	**A+**	**B+**	**AB+**
CONVALESCENT PLASMA REQUISITIONS RECIVED	**296**	**209**	**406**	**67**
BLOOD GROUP	**O-**	**A-**	**B-**	**AB-**
CONVALESCENT PLASMA REQUISTIONS RECIVED	**5**	**2**	**5**	**3**

TABLE NO 2 The above mentioned table represents blood group wise requisition of COVID 19 convalescent plasma.

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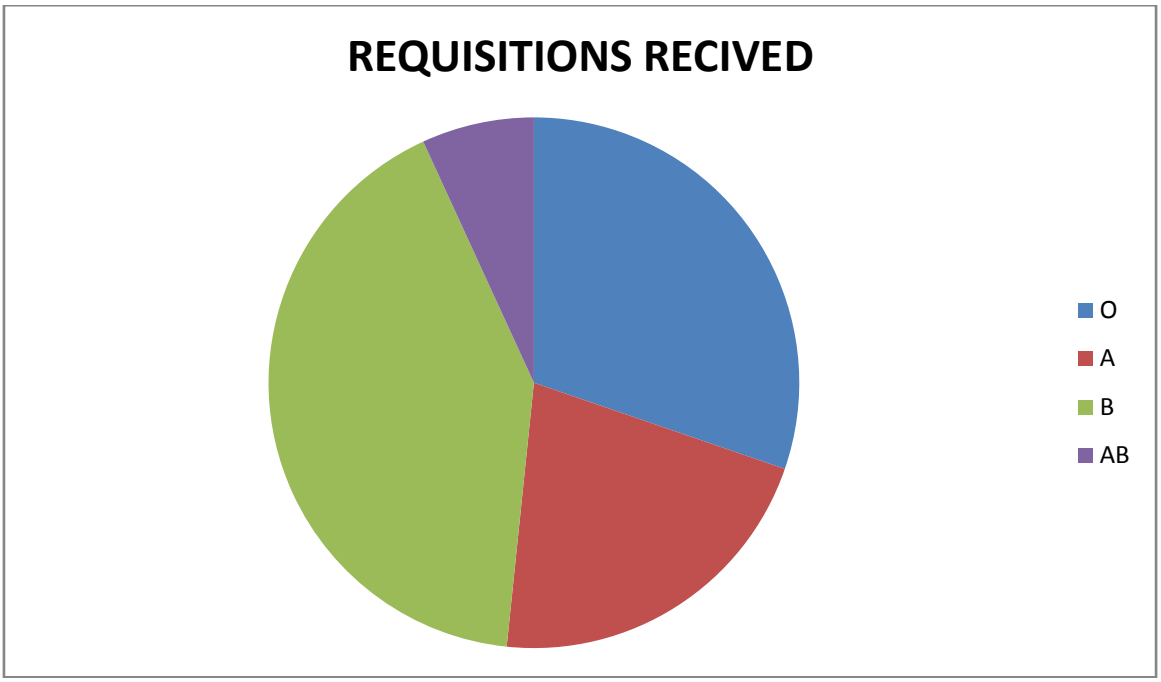

TABLE 3 Pie chart showing distribution of blood group wise demand for COVID 19 convalescent plasma.

IV. Disussion:

On March 11th, 2020, the World Health Organization (WHO) declared COVID-19 infection as a pandemic [4].

The virus causing COVID-19 infection is a corona virus called SARS-CoV-2; it began to scare the world since its initial outbreak in China, because of the characteristics of contagion (high rate of contagiousness associated with high lethality) [5]. The virus was mystery to the whole world and no specific treatment was available meanwhile plasma therapy was advocated by many studies. Cai et al. cited two official sources (National Health and Health Commission, Health Bureau of the Logistics Support Department of the Central Military Commission; Chinese Society of Blood Transfusion) reporting significant improvements in patients affected by COVID-19 and treated with plasma donated by recovered patients[6]. Blood centers are not unaware of the challenges of motivating a blood donor and maintaining blood stocks. This was more felt during the global COVID pandemic in the situation of lockdowns and social distancing. In a recent article by Choudhury et al., there were major challenges in low- and middle-income countries in terms of shortages in blood donors and supply, safety of staff, donors and public, logistics of test kits and consumables, communication, and transport and convalescent plasma.[7]

In India, permission to conduct a Clinical Trial of Convalescent Plasma for COVID‑19 patients was given by the Drug Controller General of India in early April 2020.Thereafter, the Indian Council for Medical Research (ICMR), started enrolling sites across the country by inviting applications from institutions catering to COVID patients, to join a multicentre trial. At very initial stage it was a challenge for blood bank to arrange the stock. The condition was even not favorable because of lockdown. AIIMS Patna was declared as COVID 19 dedicated center and plasma therapy was practiced widely, in span of six month of this study there were 979 requisition of plasma therapy. Though requisition was received for all group type, though most common was for B+ in comparison to normal blood group distribution in which O+ is most common {8}.Overall Rh positive demand was more than Rh negative which is similar to the normal Rh distribution. Sequence of normal blood group distribution is O, B, A, AB (8). If we compare it with our study, the finding for blood group wise convalescent plasma requisition is B, O, A and AB.

It is important to select the patient appropriately. Only moderately affected patients as defined below have shown to benefit from the CCP therapy. For infusion of plasma, standard operating procedure for transfusion of FFP should be followed with special care to monitor these patients during and post-24 hours of transfusion. Moderate disease with increasing oxygen requirements should receive CCP therapy. It should be done before the patient goes into multiple organ failure. Failure of steroid therapy is not required before giving plasma. Patient should not have history of Ig A (immunoglobulin A) deficiency syndrome or allergy to immunoglobulin's. One or two therapeutic units of 200-250 ml each should be administered to the patients on two consecutive days, 24 hours apart, if first unit is tolerated well, depending on the condition of the patient. It is advised that donor CCP units provided to patient should preferably be from two different donors. Patient

should be closely monitored for adverse effects of plasma and appropriate intervention should be instituted, if needed.CCP therapy may be given along with other therapies like Remdesivir, Tocilizumab, etc. Patient should be monitored for improvement/deterioration after CCP therapy receiving of cross-match request and patient's sample:

Once patient's request form for CCP is received, the blood group is performed. It is a good practice to perform group and screen for all patients at the time of admission. A separate consent form (besides regular consent that is part of hospital/blood bank protocol) is required. Refer patient Informed Consent Form (ICF) ICMR template. The request form should mention "off-label" use of CCP therapy.

SOP for plasma transfusion:

- Check the following details on the compatibility label attached to the bag; exactly match the details on the patient's chart

a. Patient's name
b. Patient's hospital reference number
c. Patient's ward
d. Patient's ABO & Rh group

- Check for any leakage from the plasma bag
- The thawed plasma collected should be taken directly to the ward without any delay
- FEP to be used immediately
- Once FEP is thawed, it cannot be cancelled
- Plasma once released from the Blood Bank shall not be taken back
- The final patient identity check:

a. The staff nurse should undertake final identity check at the Patient's bedside just before commencing the administration of the blood products
b. Check the bag for clot/hemoIysis/contamination/precipitates
c. Check the patient's IP matches with the details on the compatibility labelattached to the plasma bag
d. Check that the patient's blood group matches with that on plasma bag
e. Check the expiry date on the bage Always use a new sterile blood set

- Collect a pre-transfusion & post-transfusion blood and urine sample of the patient
- Rate of Infusion

o Healthy individual —2 to 3 ml/Kg/hour (1 unit in 1.5hrs)
o Volume overload/heart patients — 1 ml/Kg/hr (1 unit in 4hrs)

The effect of plasma therapy is variable

V. Conclusion:

COVID 19 pandemic is challenging for whole medical fraternity where plasma therapy initially was a hope in which blood bank has an immense role to play. Though plasma therapy was used under trail of ICMR, it was challenge to maintain stock of convalescent plasma in lockdown period. In this observational study it was found that request for all group type convalescent plasma was received in the department of transfusion medicine. However, blood group O was most common group to be asked for and least was blood group AB. With this study it can be concluded that all group convalescent plasma is required and should be maintained in plasma bank however need of blood group O was much more. This signifies that donors of all groups should be motivated and stock should be prepared accordingly. There are certain limitations of this study as it is done for a short span of time, very few literatures are available for comparison and lastly done only for a limited specific geographical area.

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Conflicts of interest:
There are no conflicts of interest.

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