

Original Research Article

Challenges faced by blood transfusion services in a tertiary care centre for recruitment of convalescent plasma donors for COVID-19

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ABSTRACT

Background: The transfusion of convalescent blood products is an age old therapy in emerging infectious disease outbreaks. Convalescent plasma works on the principle of passive immunotherapy and Viral Neutralization. In the Current pandemic of corona virus disease (COVID-19), convalescent plasma transfusions can have therapeutic role as there is no specific preventative and therapeutic options. This study was done to see the challenges faced by blood transfusion services for recruitment of plasma donors.

Methods: The retrospective study included challenges faced by blood transfusion services in recruiting Donors for convalescent plasma for COVID-19 and strategies followed for improving the donation at SMS Medical College and Hospital from April 2020 to October 2020.

Results: This study evaluated challenges faced to recruit the recently recovered COVID-19 patients as donors, Setting up of plasmapheresis capacity, Role of social media in recruitment of Convalescent plasma donors, Financial aspects associated with Convalescent plasma donation, Role of NGOs in recruitment of donors and Success achieved in organization of donor mobilization and plasma collection.

Conclusions: Recruitment of Convalescent Plasma donor from COVID-19 recovered patients is a big challenge for blood transfusion services. Different strategies to motivate donors should be implemented such as personnel communication, advertisement via classical mass media like radio, poster, newspaper and online media.

Keywords: Blood transfusion services, Convalescent plasma, COVID-19

INTRODUCTION

In the Current pandemic of corona virus disease (COVID-19), convalescent plasma transfusions can have therapeutic role as there is no specific preventative and therapeutic options.¹ The United States Food and Drug Administration (US FDA) released a guidance document for investigation of convalescent plasma in the United States for COVID-19.²

The transfusion of convalescent blood products is an age old therapy in emerging infectious disease outbreaks. Convalescent plasma works on the principle of passive immunotherapy and Viral Neutralization.³

The Pandemic of the Spanish influenza 1918–1920 was the first viral infection for which convalescent blood products were found to be potentially effective during clinical studies. There was a meta-analysis done on 8 studies of the Spanish flu on 1703 patients, results of which showed that there was reduced mortality from treatment with convalescent blood products.⁴

There were few other emerging infectious diseases, such as West Nile Virus, H1N1, SARS-CoV-1 and MERS-CoV in which convalescent plasma was used due to possible passive immunity. There have been many publications including reviews/editorials, observational studies (retrospective, prospective, or case series), and a

systematic literature review in which convalescent plasma was used for SARS-CoV-1 and MERS.^{5,6}

In 2015 systematic review meta-analysis was done on convalescent plasma and immunoglobulin for the treatment of severe acute respiratory viral infections, it showed a statistically significant reduction (75 %) in the odds of mortality.⁷ SARS-CoV-2 causes COVID-19 and is the new emerging virus responsible for the current global pandemic. Convalescent plasma from donors who have recovered from COVID-19 may be most promising when administered shortly after symptom onset within 5-7 days. Protection may last from weeks to months.⁸ Some studies done in seriously ill patients in China who received convalescent plasma therapy had improvement in oxygenation and reduced inflammation and viral load.⁵

It is necessary to assure that plasma donation is safe for the recovering patient/donor so that available donors who have recovered from the disease and meet eligibility criteria to donate convalescent serum come forward willingly for donation.

This study was done to see the challenges faced by blood transfusion services for recruitment of plasma donors.

METHODS

The retrospective study included challenges faced by blood transfusion services in recruiting Donors for convalescent plasma for COVID 19 and strategies followed for improving the donation at SMS Medical College and Hospital from April 2020 to October 2020. The clinical management protocols for COVID-19 issued by Union health ministry, India on June 27 allowed use of convalescent plasma (off label) for treating coronavirus-infected patients in moderate stage of illness under investigational therapies.

National Criteria for Recruitment for Convalescent donors was very strict which included;

>18 years of age, Males or nulliparous female donors of weight >55Kg, Prior diagnosis of COVID-19 documented by a laboratory test (RT-PCR) with symptomatic disease with at least fever and cough and, Complete resolution of symptoms at least 28 days prior to donation or Complete resolution of symptoms at least 14 days prior to donation and two negative real time PCR test for COVID-19 from nasopharyngeal swab, collected 24 hours apart.

In addition, donor eligibility criteria for whole blood donation should be followed in accordance to the Drugs and Cosmetics Act 1940 and rules 1945 therein (as amended till March 2020).

The individuals fulfilling the above criteria were contacted telephonically and explained the details about the Procedure of Convalescent plasma donation. They

were encouraged to visit blood bank for further evaluation towards eligibility for plasma donation. If requested, they were provided transport for the same.

Once they passed the screening and were found to be fit then they were invited to apheresis plasma donation of 500 mL of plasma.

This study was done to evaluate;

Challenges faced to recruit the recently recovered COVID-19 patients as donors, Setting up of plasmapheresis capacity, Role of social media in recruitment of Convalescent plasma donors, Financial aspects associated with Convalescent plasma donation, Role of NGOs in recruitment of donors, Success achieved in organization of donor mobilization and plasma collection.

SPSS software version 20 was used was statistical Analysis.

RESULTS

Table 1: This shows various steps taken by blood transfusion services for recruitment of donors for convalescent plasma.

Steps taken by BTS	What was done?	Who was involved?
Engagement of community and donors	Identification of the survivors', Common strategies were defined to inform and recruit donors, Consultations were done with stakeholders, Reaching and engaging communities.	Head of institute, Internal medicine department, Blood transfusion services
Recruitment and education of plasma donors	Training of staff , Organization of plasma motivation camps, Telephonic motivation, Involvement of media for motivational talks, Creation of special videos	Head of institute, Blood transfusion services, Various NGOs
Plasma donation process	Friendly welcoming, transparency, and privacy keeping was taken care of, Frequent (weekly) meetings were done with staff and ngos	Blood transfusion services

Table 1 shows various steps taken by Blood Transfusion Services for recruitment of donors for convalescent plasma. It summarizes what was done by blood transfusion services for engagement of community and donors, for recruitment and education of Plasma Donors and how was plasma donation process done. Different departments involved in recruitment are also described in above table.

Table 2 shows the clinical and demographic profile of Donors who were screened for donating convalescent plasma. As 80% of donors were asymptomatic, they were screened out in the initial phase. Further assessment was done based on inclusion criteria and few donors were deferred due to various medical reasons.

Table 2: Describes the demographic details and clinical characteristics of the participants.

Variables	No. of donors
Age (in years)	
<18	404
19-59	2326
>60	270
Sex	
Male	1800
Female	1200
Clinical profile	
Asymptomatic	2400
Symptomatic	600

Figure 1 summarizes the yield of plasma donation. Only 2.8% donated plasma for first time. 80 % of donors were asymptomatic. 404 numbers were age less than 18 and 728 number were females who were multiparous. All above were screened out in the initial face.

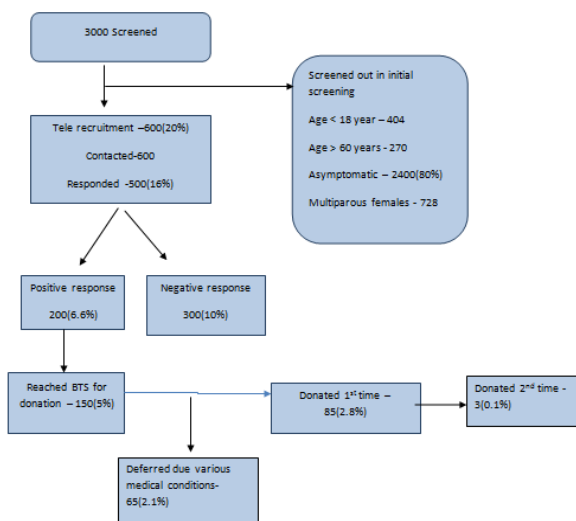


Figure 1: The yield of plasma donation in the department of immuno-haematology and transfusion medicine

DISCUSSION

Recruitment of donors for convalescent plasma therapy was a big challenge. There were lots of obstacles faced by BTS to recruit the eligible donors. This article describes the practical limitations faced in recruitment of donors for collection of convalescent plasma for the treatment of highly contagious COVID-19 and efforts done by blood transfusion services for recruitment.

Despite the availability of 3000 confirmed patients who were screened, only 85(2.8%) persons were successfully recruited for apheresis plasma donation.

Challenges faced to recruit the recently recovered COVID-19 patients as donors

Lots of Hinderances and difficulties were faced during recruitment for donors. As Per National guidelines, for donor who need to be recruited should be symptomatic. 80 % of donors were asymptomatic, 404 number were age less than 18 and 728 number were females who were multiparous.

All above were screened out in the initial face.

During the first telephonic screening, not all persons on the list could be reached by phone at their initial contact. Some of them did not answer phone calls (e.g., at work or engaged in other activities), some refused immediately upon invitation, some were not in town, and some even had wrong phone numbers registered, some were rude when called upon for donation.

It was seen that some were not willing to proceed at all. Blood donation is solely a voluntary and nonremunerated process which is also a fundamental element for blood safety process. Therefore, the participation of donors relied completely on the altruistic behaviour of donors.

Donors had uncertainty among them about pain and discomfort regarding aphaeresis' procedure which was one of the reasons for not donating. Another concern was about their health as they had recently recovered from a disease condition. Another significant reason for declining for donation was the fear among donors about getting reinfected by coming to an infected hospital.

Therefore, it was not surprising that the overall response rate to tele recruitment was only 20%. Even if the screening appointment had been made 50 did not turn up.

It was also during the seen in blood donation, that the present donor eligibility was a critical limiting factor. Our main motive was to take possible convalescent plasma from recovered patients, protection of donors' welfare and blood safety and quality were equally taken care of. In this study as much as 65 potential donors (2.1%) were screened out because of failure in health history screening.

Therefore, further publicity was made to focus on the donation aspect to ensure those eligible after screening would come back to donate.^{9,10}

Setting up of plasmapheresis capacity

More aphaeresis machines and trained operators were mobilized to support. Convalescent plasma collection provided the BTS an excellent opportunity in the mobilization of resources and expertise to cope with recruitment of recovered patients for plasma donation within a short time frame. One big challenge which was seen was the requirement of routine blood donation service to support hospitals' need for clinical transfusion which was also taken in account where aphaeresis' machines were required to collect PLTs for clinical need. Separate plasma bank was created so that donors coming for donation should not have fear in coming to hospital in this pandemic. Entry to plasma bank was separately created for Convalescent plasma donors.

Role of social media in recruitment of convalescent plasma donors

Special posters and videos were created to motivate the COVID 19 recovered patients to become donors. Special appeals were made on radio, television and newspaper for motivating the donors. Appreciation events were organized for Donors who donated so that others get motivated.

Financial aspects associated with convalescent plasma donation

Convalescent Plasma donation posed a huge financial burden on the hospital. Cost of Apheresis kit, testing charges of various tests required mandatory were taken care by hospital. Few donors were from different cities, cost of their transport, stay and food were managed by hospital authorities. As convalescent Plasma was made free of cost for patients in government facility, and therefore no cost was reimbursed from patients.

Role of NGOs in recruitment of donors

BTS contacted the voluntary blood donor Organizers and defence services personnel to sustain inflow of plasma donors. Various NGOs approached to BTS to help motivate COVID 19 recovered patients. They helped BTS in tele recruitment and through social media recruitments. Special plasma Donation motivation camps were organized by various NGOs.

Success achieved in organization of donor mobilization and plasma collection

Despite so many challenges and hurdles faced by blood transfusion services, still recruitment was possible. Various reasons included 1) the initial assessment that improved our understanding of the stakeholder's

expectations and concerns, 2) involvement and close collaboration of strong team, 3) strong leadership. As huge no. of Health Care workers was COVID 19 positive, they played an important role in being donors for Convalescent plasma.

Ample time was spent in recruiting, allowing recovered patients to be screened and bringing their extra time to come back for plasma donation. It was reported that employees in our institute worked for long hours with maximum staff working over shifts to tackle recruitment in this Pandemic.

CONCLUSION

Recruitment of Convalescent Plasma donor from COVID 19 recovered patients is a big challenge for blood transfusion services. Different strategies to motivate donors should be implemented such as personnel communication, advertisement via classical mass media like radio, poster, newspaper and online media. Major factor which posed hinderance was the experience faced by COVID 19 patients, to them, they had been infected with COVID-19 infection, they had undergone lot of mental trauma. To encourage for convalescent plasma donation, donors need to have a better experience as patients. Post COVID-19 clinics should be encouraged for follow -up of recovered patients so that they can be motivated for further recruitment as donors.

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