



Original Research Article

Study of Appropriateness of FFP transfusions in a tertiary care centre

N Thamarai Selvi¹, R Revathishree^{1,*}, Adayalam Chandana¹, Dost Mohamed Khan¹, S C Abilash¹¹Dept. of Pathology, Shri Sathya Sai Medical College and Research Institute, Sri Balaji Vidyapeeth (Deemed- To Be University), Ammapettai, Chengelpet, Tamil Nadu, India

ARTICLE INFO

Article history:

Received 16-02-2021

Accepted 26-02-2021

Available online 03-04-2021

Keywords:

Transfusion

Appropriateness

FFP

ABSTRACT

Introduction: Blood transfusion is an essential part of modern health. Indiscriminate use of blood components is on the rise due to easy availability of sophisticated blood banking services. The aim of this study was to evaluate appropriate usage of Fresh frozen plasma (FFP).

Materials and Methods: This study was conducted in a tertiary care centre. A total of 4236 blood request forms were analyzed in this study over a period of 12 months out of which 8.2% (n=349) were for FFP. Number of units requested were noted and appropriateness of requested transfusions was assessed according to the National guidelines on transfusion.

Results: A total of 4236 blood request forms were analyzed in this study, out of which 8.2% (n=349) were for FFP. Out of these 349 FFP requests, 53.9% (n=188) requests were considered appropriate, 29.8% (n=104) were considered inappropriate and 16.3% (n=57) requests could not be assessed since PTINR values were not available. Out of the 29.8% inappropriate transfusions, in 13.8% (n=48) transfusion was appropriate but number of units transfused were inappropriate and in 16% (n=56) transfusion was considered inappropriate.

Conclusion: This indicates that significant number of inappropriate transfusions were noted. This issue has to be addressed and inappropriate transfusions should be avoided. This can be achieved by regular CME programmes, educational visits to various departments and development of hospital transfusion guidelines which has to be agreed and followed by clinicians.

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1. Introduction

Blood transfusion is an essential part of modern health care.¹ Indiscriminate use of blood components is on the rise due to easy availability of sophisticated blood banking services. Auditing of blood transfusion practice is therefore necessary to ensure the rationale use of blood components. First audit of transfusion practices was done by Bock as early as 1936. Several studies on blood audit have been conducted since then, evaluating the appropriateness of blood transfusions and have helped in introducing structured guidelines for use of blood products relevant to their situations.²

* Corresponding author.

E-mail address: mail2rrevathi@gmail.com (R. Revathishree).

The most important feature to assess rational use is a note by the physician in progress sheet or other appropriate part of the patient record stating the indications for transfusion. Appropriate documentation is beneficial in assessing transfusion justification within established clinical guidelines.³

Evaluation of appropriate use of blood and its components forms a component of quality assurance and the main objective is the improvement of patient care by reducing unnecessary transfusions which incidentally share the hazards of iatrogenic diseases. From an economic point of view, this evaluation can also improve resource management.² The aim of this study was to evaluate appropriate usage of Fresh frozen plasma (FFP).

2. Materials and Methods

This study was conducted in a tertiary care centre. A total of 4236 blood request forms were analyzed in this study out of which 8.2% (n=349) were for FFP. Number of units requested were noted and appropriateness of requested transfusions was assessed according to the National guidelines on transfusion.⁴

Each transfusion was classified as one of the following categories:

1. Transfusion appropriate and number of units transfused appropriate
2. Transfusion appropriate but number of units transfused inappropriate
3. Transfusion considered inappropriate
4. Quality of documentation did not allow an accurate decision regarding appropriateness.⁵

Request forms of neonates and children upto 18 years of age were excluded from the study. CT ratio was calculated with the formula: Cross-match (C) to Transfusion ratio = No. of units cross-matched / No. of units transfused. Microsoft Excel was used for data entry and analysis and results were expressed in percentages.

3. Results

A total of 4236 blood request forms were analyzed in this study, out of which 8.2% (n=349) were for FFP. Out of 349 requests for FFP, PTINR values were mentioned in 63% (n=220) and not mentioned in 37% (n=349). Out of these 349 FFP requests, 53.9% (n=188) requests were considered appropriate, 29.8% (n=104) were considered inappropriate and 16.3% (n=57) requests could not be assessed since PTINR values were not available. Out of the 29.8% inappropriate transfusions, in 13.8% (n=48) transfusion was appropriate but number of units transfused were inappropriate and in 16% (n=56) transfusion was considered inappropriate. 2351 units of FFP were ordered and 2283 units were issued and CT ratio was 1.

4. Discussion

Blood has no substitute and blood transfusion is life saving in many situations.⁶ However indiscriminate use of blood components is on the rise due to easy availability of sophisticated blood banking services. Many studies suggest that monitoring of blood transfusion practice and its healthy criticism have brought a positive response among clinicians and thus decrease in the number of inappropriate transfusions.⁷ Dylag et al showed that out of the total 2746 blood component transfusions, 13.5% (n=371) were of whole blood, 75.5% (n=2073) of PRBCs, 10.2% (n=281) were of FFPs and 0.8% (n=21) were of platelet concentrates.⁸ In this present study there were total of 4236 requests, out of which 76.6% (n=3246) requests

were for PRBC, 8.3% (n=352) were for Platelets, 8.2% (n=349) were for FFP and 6.8% (n=289) were for more than 1 components. Whole blood was the most ordered component earlier whereas now it has become obsolete and appropriate components are used. Usage of appropriate components instead of whole blood has 2 advantages. It reduces the increased volume load dumped into the patient unnecessarily and help in reducing unnecessary utilization of blood components which is a valuable resource.

In a study conducted by Friedman et al, he found that out of 172 transfusions, 51% (n=88) were adequately documented, 23.2% (n=40) were partly documented and 25.4% (n=44) were inadequately documented. It was also noted that inappropriate transfusions were associated with inadequately documented forms. Only 9% (n=8) of adequately documented forms were not justifiable whereas 50% (n=20) of partly documented and 73% (n=32) of inadequately documented were found to be inappropriate.³ In the present study, PTINR values were not mentioned in 37% (n=349). Recording indications for transfusion on the request form could make appropriateness evaluation easier and could act as a reminder for clinicians.⁹ Diagnosis and indications were collected from various wards through phone in many cases and could not be traced in 16.3% (n=57) forms even after these efforts. Investigation details that are not mentioned (37%) were collected from Hospital Information System (electronic data).

30.4% of inappropriate FFP transfusions were noted in a study by Viswanathan et al.¹⁰ 23.1% of inappropriate FFP transfusions were recorded by kakkar et al.¹¹ 39% of FFP transfusions were considered inappropriate in a study conducted in the department of surgical oncology by Chatterjee et al.¹² A study conducted by Basu et al found that 42% of FFP transfusions were inappropriate.¹³ 32% of inappropriate FFP transfusions were also seen in a study conducted by Eagleton et al.¹⁴ Inappropriate transfusion as high as 73% was noted in a study conducted by Chng et al.¹⁵ Hui et al conducted a study on FFP transfusions which revealed that 28% of FFP transfusions were inappropriate.¹⁶ In a study conducted by Luk et al, it was stated that 53% of inappropriate transfusions were noted.¹⁷ In the present study, there were 349 FFP requests out of which 53.9% (n=188) requests were considered appropriate, 29.8% (n=104) were considered inappropriate and 16.3% (n=57) requests could not be assessed since PTINR values were not available. Appropriateness of FFP transfusions highly varies from study to study and in a large number of cases (16.3%) assessment could not be made which was a drawback due to inadequate investigation details.

Cross-match (C) to Transfusion ratio = No. of units cross-matched / No. of units transfused. A C/T ratio of ≤ 2.5 is indicative of significant blood usage. A C/T ratio of > 2.5 means that less than 40% of cross-matches are

transfused.¹⁸ In another study conducted by Chawla et al, C/T ratio was around 2.5.¹⁹ In a study conducted by Abayomi et al, CT ratio was 2.1:1.²⁰ In the present study, CT ratio was 1.0 for FFP. This indicates that there was significant blood usage in this hospital. The blood bank in this hospital has conducted CMEs and made few departmental meetings to explain significance of blood usage and this may be one of the reasons for good CT ratio in this hospital.

5. Conclusion

It was observed in this study that out of these 349 FFP requests, 53.9% (n=188) requests were considered appropriate, in 13.8% (n=48) transfusion was appropriate but number of units transfused were inappropriate and in 16% (n=56) transfusion was considered inappropriate and 16.3% (n=57) requests could not be assessed since PTINR values were not available. This indicates that significant number of inappropriate transfusions were noted. This issue has to be addressed and inappropriate transfusions should be avoided. This can be achieved by regular CME programmes, clinico-pathological meet, educational visits to various departments and development of hospital transfusion guidelines which has to be agreed and followed by clinicians.

6. Conflicts of Interest

All contributing authors declare no conflicts of interest.

7. Source of Funding

None.

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Author biography

N Thamarai Selvi, Assistant Professor

R Revathishree, Associate Professor

Adayalam Chandana, Assistant Professor

Dost Mohamed Khan, Professor

S C Abilash, Professor

Cite this article: Selvi NT, Revathishree R, Chandana A, Khan DM, Abilash SC. Study of Appropriateness of FFP transfusions in a tertiary care centre. *IP Arch Cytol Histopathology Res* 2021;6(1):12-14.