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A pilot study on "Rational use of Fresh Frozen Plasma and Platelet Concentrates in a tertiary care hospital"

Medical Science

KEYWORDS : FFP, appropriate and inappropriate uses

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ABSTRACT

Objective: To analyze the current situation of use and misuse of fresh frozen plasma (FFP) and platelet concentrates transfusion in various clinical conditions. Methods: This was a cross sectional study done at PanditDindayalUpadhyay general hospital,Rajkot between December 2013 to February 2014. About 150 blood bank based file records of those patients who received fresh frozen plasma and platelet concentrates were evaluated.Each file record was checked for the diagnosis of the patient and coagulation profile. Results:Out of total 638 FFP and 117 PC transfused,80% of FFP and 88% of PC were issued appropriately. Conclusion: Although majority of the FFP and PC were used appropriately,considerable units were also used inappropriately.

INTRODUCTION

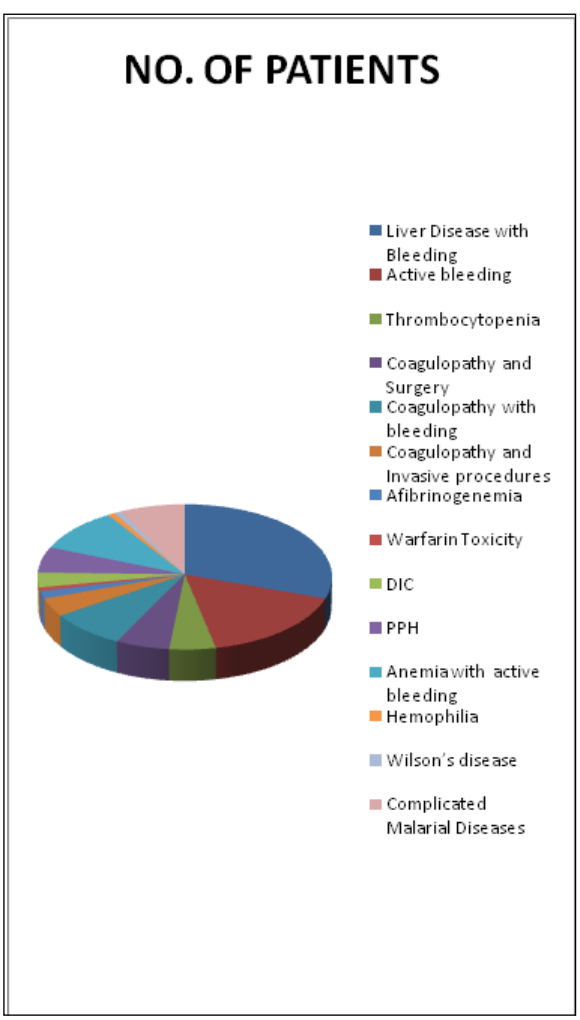
Fresh frozen plasma (FFP) and platelet concentrates has been used for treating a variety of clinical disorders since the early days of blood banking and transfusion.[1] There exist only a few firm indications for both. There is a growing consensus that most of the time this both blood product is used inappropriately and without any scientific rationale.[2,3] Current guidelines published by multiple organizations consider fresh frozen plasma (FFP) transfusion appropriate only under specific circumstances[4-10]. Reported percentages of inappropriate FFP orders vary from institution to institution and range from10% to 83%[11].The objective of this study was to evaluate its proper utilization in various clinical conditions and to estimate its appropriate transfusion practice.

MATERIAL AND METHOD

This cross sectional study was done in Pandit Dindayal Upadhyay general hospital Rajkot from December 2013 to February 2014 over a period of 3 months.Blood bank data showed that during 3 months total 638 fresh frozen plasma and 117 platelet concentrates were issued to 150 patients having various diagnosis coming from different departments like medicine, surgery, obstretics and gynaecology, orthopaedics, paediatrics and ENT mainly. All patients were evaluated for the evidence of coagulopathy, presence of bleeding and clinical diagnosis. FFP is indicated in the presence of active or anticipated bleeding and disturbed coagulation in some conditions like massive transfusion, active bleeding, liver diseases,disseminated intravascular coagulation(DIC),haemophilia etc conditions whereas platelet concentrates is indicated in pancytopenia and thrombocytopenia in our setup more commonly due to infections like malaria and dengue fever. Treatment was regarded as inappropriate in conditions where there was no evidence of active bleeding or its risk due to coagulopathy.

Results

The study of 150 patients showed that they received 638 units of fresh frozen plasma and 117 units of platelet concentrates. Out of these 609 units of fresh frozen plasma and 103 units of platelet concentrates were transfused appropriately. Large proportion of these patients had deranged coagulation profile because of liver disease,sepsis,portal hypertension,deep vein thrombosis and afrinogenemia. These patients were classified under "appropriate" transfusions as they were actually bleeding or underwent surgery and some invasive procedure.The patients who underwent some surgical maneuver or were actively bleeding at the time of FFP transfusions for reversing the effect of warfarin were also considered under the same heading. Similarly patients with acute DIC and neonatal septicaemia were also included in coagulopathy with bleeding.

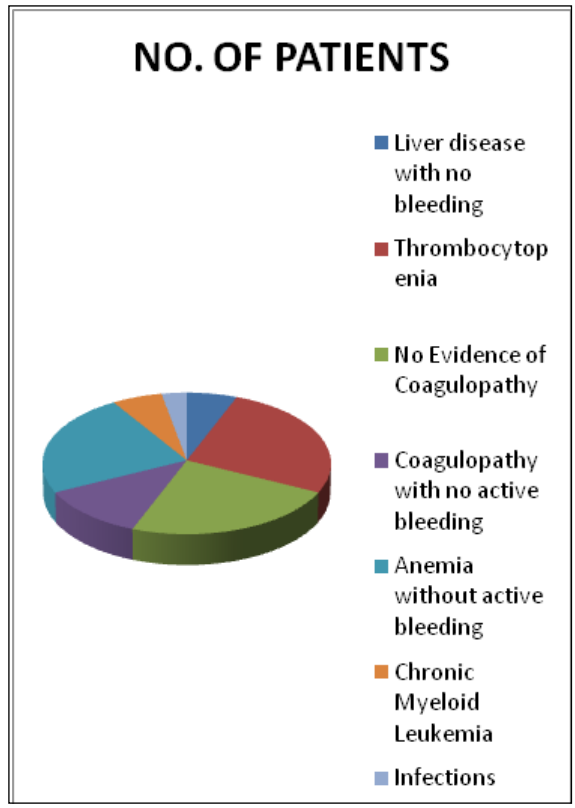


APPROPRIATE USE OF FFP AND PLATELET COCENTRATES IN VARIOUS CLINICAL CONDITIONS

CLINICAL DIAGNOSIS	NO. OF PATIENTS	NO. OF FRESH FROZEN PLASMA ISSUED	NO. OF PLATELET CONCENTRATE ISSUED
Liver Disease with Bleeding	33	165	4
Active bleeding	19	70	24
Thrombocytopenia	6	00	23
Coagulopathy and Surgery	07	37	08
Coagulopathy with bleeding	9	32	01
Coagulopathy and Invasive procedures	05	30	04
Afibrinogenemia	02	05	00
Warfarin Toxicity	01	06	00
DIC	04	18	09
PPH	07	46	10
Anemia with active bleeding	12	58	16
Hemophilia	01	01	00
Wilson's disease	01	04	00
Complicated Malarial Diseases	09	34	04
Total	116	506	103

INAPPROPRIATE USE OF FFP AND PLATELET CONCENTRATE IN VARIOUS CLINICAL CONDITIONS

CLINICAL DIAGNOSIS	NO. OF PATIENTS	NO. OF FRESH FROZEN PLASMA ISSUED	NO. OF PLATELET CONCENTRATE ISSUED
Liver disease with no bleeding	2	12	00
Thrombocytopenia	9	52	00
No Evidence of Coagulopathy	8	31	09
Coagulopathy with no active bleeding	04	14	00
Anemia without active bleeding	08	12	05
Chronic Myeloid Leukemia	02	08	00
Infections	01	03	00
Total	34	132	14



Discussion

It is very essential that blood and its components should be used appropriately.Significant efforts during the last 20 years have been focused on developing rational criteria for the transfusion.Most guidelines use the laboratory criteria of PT and/or PTT greater than 1.5 times normal paired with the presence of bleeding or anticipated bleeding. There are several reasons that blood transfusion should be done on a scientific basis. Plasma transfusion may lead to transmission of Hepatitis B and C and HIV viruses, allergic reactions, transfusion related acute lung injury and volume overload. It is also necessary to rationalize plasma therapy,as many important products like albumin, globulin, factor VIII and IX etc. are prepared plasma.

In our study we found that FFP was used inappropriately in infections,liver diseases in absence of any coagulopathy,acute renal failure and leukaemia.Severe liver disease is one of the most common clinical indication of FFP. The patients with liver disease have several abnormalities that can lead to bleeding like coagulopathy,disseminated intravascular coagulation (DIC), thrombocytopenia and surgical causes esophageal varices. It is recommended that FFP should be given only when bleeding has taken place due to impaired coagulation or when surgery is anticipated in the patients with liver disease.

Conclusion:

Out of total 638 units of FFP and 117 units of PC issued, 513 units of FFP and 104 units of PC were issued appropriately.It means rational use of FFP is by 80% and of PC is by 88%.

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