ORIGINAL RESEARCH PAPER

Cardiology

KEY WORDS:

EFFECT OF TRANEXAMIC ACID IN THE IMMEDIATE POST-OPERTAIVE BLEEDING – A SINGLE CENTRE STUDY

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AIM OF STUDY The study was designed with the primary AIM of evaluating the effect of tranexamic acid in reducing the bleeding tendency in immediate postoperative period for patients who have undergone cardiac surgery .

To evaluate whether tranexamic acid reduces the need for red cell transfusions.

To understand the occurrence of postoperative thrombo embolic events.

MATE MATERIAL AND METHODS

This study, designed to be prospective and randomized was undertaken as an observational evaluation on the topic of usefulness of tranexamic acid in reducing post operative bleed in patients undergoing cardiac surgery.This study was conducted in the department of cardio thoracic surgery at Rajiv Gandhi government general hospital, Chennai.

This study design was for a year , 2017, and we used a descriptive analytical method.

INCLUSION CRITERIA

All patients undergoing open cardiac surgery procedures involving cardiopulmonaryby pass.

EXCLUSION CRITERIA

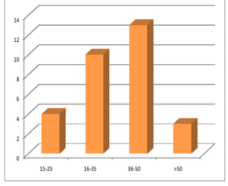
Patients with pre existing evidence of ofcoagulopathy.Patients with hepatic dysfunction Patients with renal dysfunction Off pump cardiac sugery cases

METHODOLOGY

Relevant information were documented in a specially designed proforma.Meticulous clinical examination preceded by detailed history, using pre framed questions.

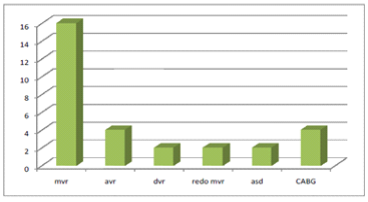
Sixty patients undergoing cardiac surgeries were randomized into a group of two, thirty each. One group of thirty patients would receive tranexamicacid , loading dose of 15 milligram per kilogram of body weight , five minutes before skin incision and one more similar dose after weaning from CPB. The other group would not receive tranexamic acid. Assessment of efficacy obtained by evaluating post operative data.

Patients were received in post operative room and monitored. Routine blood investigations sent on arrival..chest drains were documented one hourly.clinical evidence for generalized medical bleed looked out for.red cell transfusion decided on appropriate indications only.all this data was recorded and analysis drawn and conclusions made.The patients were followed up during their hospital stay to record any events of thromboembolism.



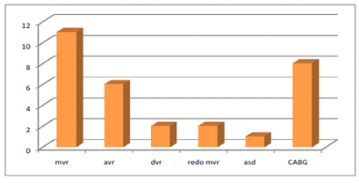
Sex distribution among patients who did not receive tranexamic acid

Pathology involved in tranexamic group.

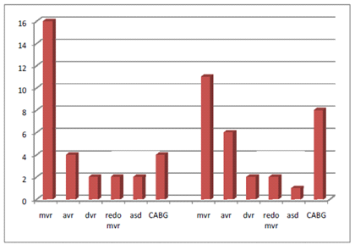


With a clear higher involvement of mitral valve disease.

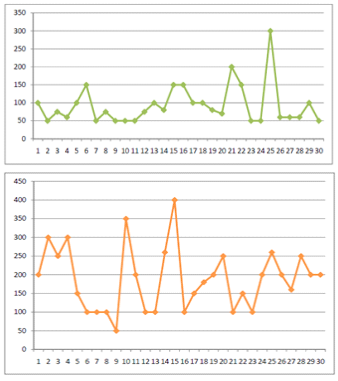
Pathology in the neutral group .



Pathology in 1) tranexamic group and 2) neutral group.



Drain trend in tranexamic group. Expressed in milliliter over first six hours.



Drain trend in neutral group…blood loss expressed in millilitre for The first six hours.

MECHANISM OF ACTION:

Aminocaproic acid and tranexamic acid belong to the group of lysine analogs. The mechanism of action is that these drugs competitively binds to lysine binding sites of plasminogen/plasmin and thus prevents de gradation of fibrin or fibrinogen.

Tranexamic acid is a water soluble lysine analog..onset of action rapid by intravenous route. The biological half life is two to three hours and the drug is totally cleared by renal route..nearly 60% of the drug is excreted by renal system at three to four hours and about 90% in about twenty four hours.

ISCUSSI

This study was designed as a prospective and randomized study.

This study was carried out in the department of cardiothoracic surgery, Rajiv Gandhi government general hospital in the year 2017.

The study included sixty patients undergoing cardiac surgeries in our department..they were randomized into a group of two, one group of patients received tranexamic acid at a dose of fifteen mg per kg body weight of the patient…one loading dose five min before skin incision and one on weaning patient from CPB..the other group did not recievetranexamic acid.

The patients were operated by single team of doctors, follow up charted meticulously,recorded data converted into analytical data with the help of a statistician.

The patients had their routine follow up..no intervention was made specially. Clinical signs for medical bleed was carefully monitored. Drain levels documented.transfusions of packed cell decided based on haematocrit. There was no patient in either group who had to been re operated.

The drain trends were definitely higher in the group that did not receive tranexamic acid…this group was always referred to as the neutral group.

The patients had their routine blood investigations done at immediate postoperative period.The neutral group did not receive any tranexamic acid at induction nor on weaning on CPB.

The beneficial effects were obvious with tranexamic acid group in the immediate post op.

The age distribution was almost similar to both groups..The young adult population seemed to dominate in both groups,underlining the higher incidence of rheumatic heart disease in that group.

The younger adult population making upto fifty percent in tranexamic group and forty five percent in neutral group. And among the distribution of the pathology of heart diseases,mitral valve replacement was on top in both groups with 52% in tranexamic acid group and 42 % in neutral group, and CABG was more in neutral group, 24%.

The drain levels in tranexamic acid was an average of 100 ml over first six hours as compared to 250 ml of neutral group,the difference is striking,although the p value is not significant, the trend definitely points to the use of tranexamic acid in reducing post operative bleed.

The drain levels at twelve hours of post op period in both the groups are not too different,with an average of 100 ml and 150 ml in tranexamic and neutral group respectively. The drain levels at twenty four hours remained almost similar ,averaging 50 and 100 ml respectively. The benefits of tranexamic acid in reducing postoperative bleed is obvious, yet the benefits after twenty four hours were not very obvious.

The drain levels thereafter were not taken into account, but no patient in either group had any alarming bleed.

The coagulation tests done on either group showed mild beneficial trends towards tranexamic acid.

There was a minimal difference in clotting time, with both groups having 65 to 68% of patients with normal clotting time. And so was the results with the platelet counts with no gross disparity between the groups.

The need for packed cell transfusion was only one unit in 45% and the remainder was not transfused in tranexamic acid group.

About 40% were transfused with one unit ,35% with two units, 20% with three units in the neutral group.

This reflects the obvious trend of increased need of red cell transfusion in the neutral group.

The platelet transfusions were given at eight hours or later only if there was a rebound bleed.

About four units transfused ,ifrequired.there was no difference in platelets that was transfused, between the groups.

RESULTS

The observation and the analytical data from this prospective Randomized study yielded the following results.In this study, either groups had a preponderance of young adult population. The age group of 25 to 36 were about 50% and 45% in tranexamic and neutral group.

- Mitral valve replacement was among the highest in both groups with close to 50 and 42% in tranexamic and neutral group.
- The mean post operative drain at six hours were 120 ml and 250 ml in tranexamic acid and neutral group, higher drain tendencies were reported in the neutral group.The p value was 0.27 not very significant, yet the trend reflects in favour of tranexamic acid.
- The need for red cell transfusion or packed cells were, only 45% required one unit of packed cell, in tranexamic acid group.
- The clotting time tests were almost similar with not much of disparity, but a smaller trend of benefit in tranexamic acid group, which had 20% of prolonged clotting time, six percent lesser than the tranexamic acid group.
- The platelet counts too, showed a benefit trend towards tranexamic acid group.The p value was not significant though, with 0.587There were three mortality in each group, totaling six..and all the mortality were not related to the drug..the cause of death was low cardiac output syndrome.There were no incidence of re operation due to bleeding in either groups.

CONCLUSION

In this study , we come to the conclusion that using tranexamic acid reduces immediate postoperative bleeding and significantly reduces the morbidity of the patient. However there is not much benefit in post operative period beyond twenty four hours.The need for packed cell transfusion also is significantly lesser with the tranexamic acid group.The abnormalities in clotting time and and platelets were almost similar with no statistical significance in either group,but showing marginal beneficial trend in tranexamic acid group.Tranexamic acid has been an efficient , cost effective and simple way in controlling postoperative bleed in patients undergoing cardiac surgery.

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