

How safe is transfusion of uncross-matched group-specific blood?

Gongal R¹

¹Department of Surgery, Patan Hospital

Abstract

Objective: Uncross-matched blood either group specific or Group O is advocated in patients with exsanguinating haemorrhage when cross-matched blood cannot be made available rapidly. The risk of using uncross-matched blood is not known clearly. The purpose of this study is to attempt to quantify the risk of major transfusion reactions resulting from the use of uncross-matched group specific blood. **Method:** The cross-matching record of Patan hospital for the period of two years was analysed looking at the number of units that had major or minor incompatibility among all the cross-matching done during this period. **Result:** A total of 6027 units were cross-matched in two years. Only one unit of blood was found to have both major and minor incompatibility. All other units of blood taken out from the freeze for the purpose of cross-matching matched the patients blood. This puts the risk of having major transfusion reaction from incompatible blood when using uncross-matched group-specific blood at 1 in 6000. **Conclusion:** Using uncross-matched group specific blood in patients with severe haemorrhage, when delay in transfusion can put life at risk, is justifiable and needs to be encouraged.

Key words: blood transfusion, uncross-matched, group specific

Cross-matched blood should be transfused at all times except in dire emergencies when patients present with exsanguinating haemorrhage. In such situations one cannot wait for cross-matching, which usually takes from 45 minutes to one hour. Advanced Trauma Life Support (ATLS) and Primary Trauma Care Courses advocate the use of blood if there is no improvement after second bolus of fluid. Cross-matched blood is preferable; if this is not available uncross-matched blood either group specific or Group O blood can be used.

There is still a considerable hesitancy and reluctance among doctors to use the uncross-matched blood in such situations because of fear of transfusion reaction. In a preliminary survey carried out, many doctors had little or no idea how much the risk of transfusion reaction was when using such blood.

This study was carried out to quantify the risk of transfusion reaction when using uncross-matched group specific blood.

Method

A survey was done among doctors of two hospitals (Patan and Tribhuwan University Teaching Hospital) of different grades. They were asked what they thought the risk of major transfusion reaction was when using uncross-matched group specific blood.

The hospital record of Blood transfusion unit of Patan Hospital was studied retrospectively for the period of two years from September 2001 to August 2003. The unit has a pre-formatted form which has to be filled out every time a cross-matching procedure is performed. In this form the date, the recipients' hospital number, name, blood group are noted. Also noted are the number of the unit of blood taken from the freeze to be cross-matched and the blood group.

Following this, cross matching is done looking for both major and minor reactions. In one slide the serum of the recipient is mixed with the donor red cells and in the other slide the serum of the donor is mixed with the recipient's red cells. The procedure takes about 45 minutes.

If major or minor incompatibility is noted, this is noted in the form and the particular unit of blood is not used for the patient.

Correspondence

Dr R Gongal
Dept. of Surgery, Patan Hospital
Email: rajgongal@yahoo.com

Result

75 doctors were surveyed. Two declined to make a guess. Majority said the risk was 1-5%. (Table 1)

During the period of two years 6027 units of blood were cross-matched of which 6022 units were for same group and five was O negative for groups other than O negative.

Of the 6022 units cross-matched only one unit was found to have both major and minor incompatibility. All other units matched the patients' blood. In other words every unit of blood except one which was taken from the freeze for the purpose of cross-matching, matched the patient's blood.

Of the five units of O negative blood which were cross-matched for patients having groups other than O negative, all showed minor incompatibilities.

Table 1. The risk of major transfusion reaction as presumed by the doctors when using uncross-matched group specific blood.

Risk	No. of doctors (n=73)
1/10000	2
1/1000	3
0.5-1%	5
1-5%	40
6-10%	8
11-20%	7
20-50%	8

Discussion

Rapid transfusion of blood in a patient with exsanguinating haemorrhage may be life saving. Advanced Trauma Life Support course advocate the use of blood if haemodynamic stability is not achieved after two boluses of crystalloids. In such situations cross-matched blood may not be available. Uncross-matched group specific or Group O blood should be used. Many other studies have also proved this to be a safe practice.^(1,2,3,4,5,6,7)

There is a considerable reluctance among doctors to use uncross-matched blood for fear of transfusion reaction. The result of survey shows the reason for this. Majority of doctors assume the risk to be much higher than it is.

This study shows that in cross-matching more than 6000 units of blood, only one unit was found to be incompatible. In other words, every time a group specific unit of blood was taken out of the freeze to cross match, this unit matched the recipient's blood. It can be said that the risk of incompatible blood being transfused is 1 in 6000 in the absence of cross matching. This does not take into account clerical error on the part of the nurses or doctors in administration of blood to the patient. Such an error does occur albeit rarely.

The risk of 1 in 6000 is a justifiable risk to take in an emergency situation and should be encouraged. It is

NOT justifiable to use uncross-matched blood in circumstances other than massive haemorrhage as haemolytic reaction resulting from incompatible blood has a very high mortality.^(8,9)

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