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Letter to the Editor

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Neonatal Transfusion: Uncross-Matched "O" Negative Blood From Unrelated Donors in Emergency

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To the Editor

Blood transfusion is the most commonly practised and successful tissue transplant. Though sick newborns often require urgent blood transfusions, there is lack of access to suitable blood products, especially in emergent situations. Early recognition and vigorous treatment is the key factor in early reversal of pediatric-neonatal shock [1]. Blood for neonatal transfusion is often issued as group O packed RBCs with compatible infant Rh type. Alternatively, non-group O infants may receive non-group O RBCs if passive maternal anti-A or anti-B is not detected in an infant's serum or plasma. In emergency situations, 10 - 20 mL/kg of O Rh-negative blood from unrelated donor may be used [2].

We retrieved data over 20 years (1997 - 2016), of neonates who received transfusion of "O" negative blood from unrelated donors as a part of treatment in emergent situations for different indications (Table 1). There were 10 neonates (four male and six female) with birth weight from 2,800 to 3,200 g. Nine babies were delivered in hospital and one was a home delivery. Two neonates with sepsis showed DIC. Since small transfusions of 20 mL or so do not require a pump, we administered it with a heparinised syringe by intermittent small bolus [3]. About 0.2 mL of heparin (1,000 U/mL) was taken in a 20 ml syringe; allowed to come in contact with the walls of the syringe by slowly moving the piston to and fro and then the heparin was thrown out of the syringe. About 25 mL of O negative donor's blood was collected by peripheral venepuncture using this heparinized syringe. This whole fresh blood was directly injected into the recipient neonate slowly over next 30 min [4]. All neonates had uneventful recovery, normal growth and mental development over a period of observation of 1 to 20. Half life of plasma heparin is very short and it is eliminated within 1 h of injection. Since the blood is injected immediately and no handling is involved, the chances of microbial contamination are very low [4].

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All the babies showed remarkable and sustained improvement with just one single small blood transfusion. We feel that 10 mL/kg of whole blood given to these babies helped them in different ways such as restoring intravascular volume, improving oxygen carrying capacity, improving low serum albumin levels and the fresh whole blood probably stimulated endogenous granulopoiesis [5]. Though certain rules in blood transfusion are meticulously followed, blood transfusion in neonatal period can be challenging and requires considering these issues: 1) Group "O" individuals can receive blood from "O" donors only. 2) "A" individuals can receive blood from "A" and "O" donors. 3) "B" individuals can receive blood from "B" and "O" donors. 4) "AB" individuals can receive blood from "AB" donors, and also from group A, B and O donors.

We feel that compatibility and cross-matching in neonatal period is still a grey zone. As previously stated, these sick neonates need less blood but require it urgently. Though transfusing "O" negative blood saved 10 lives; further research is warranted. Our series may be the one with the longest period of observation establishing safety of this intervention.

Conflict of Interest

None of the authors have any conflict of interest to declare.

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Author Contributions

Sanjay G. Gokhale and Sankalp Gokhale designed the study, wrote the manuscript, and did critical literature search.

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Table 1. Relevant Details of 10 Neonates, Who Received Uncross Matched "O" Negative Blood Transfusion

	Diagnosis	Period of observation years	Presentation	Diagnostic studies
1	Neonatal sepsis and hypovolemic shock	1	Cord infection	Sepsis screen
2	Hemorrhagic disease of newborn	3	Cord bleeding, no other abnormality	Prothrombin time
3	Neonatal sepsis and hypovolemic shock	3	Cord infection	Sepsis screen
4	Neonatal sepsis and hypovolemic shock	5	Cord and skin infection	Sepsis screen
5	Neonatal sepsis and hypovolemic shock, DIC	5	Sepsis, Hematemesis, echymoses	Sepsis screen
6	Neonatal sepsis and hypovolemic shock, DIC	7	Sepsis, hematemesis, echymoses	Sepsis screen + FDP documented
7	Neonatal sepsis and hypovolemic shock	12	Meconium aspiration	Sepsis screen
8	Neonatal sepsis and hypovolemic shock	14	Meconium aspiration, pneumonitis	Sepsis screen
9	Bleeding from cord due to slipped ligature	17	Cord bleed, slipped ligature	Nil
10	Bleeding from cord due to slipped ligature	20	Cord bleed, slipped ligature	Nil

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