

EXCHANGE TRANSFUSION IN SEVERE ANAEMIA WITH FAILURE IN PREGNANCY

by

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Anaemia complicating pregnancy accounts for about 20% of maternal deaths and in another 20% anaemia is a contributory factor. The cases which add to the maternal mortality are the severe anaemias associated with congestive cardiac failure and myocardial damage. The mortality is still higher when such incapacitated patients get into labour.

Pregnant women with less than 15% haemoglobin and P.C.V. less than 13% are usually in congestive failure. In one series of Fullerton and Turner (1962) 55% of patients died. One fifth of the deaths were directly caused by circulatory overloading following the use of direct packed cell transfusion. This is quite possible because the anaemic does not tolerate increased blood volume as the healthy heart does.

The purpose of blood transfusion is to increase the oxygen carrying capacity of the blood and thus correct the failure. The transfusion can be effected by several methods. Transfusion with whole blood for severe anaemia is dangerous since the resulting increased blood volume and venous pressure is likely to lead to acute pulmonary oedema. Packed cell transfusion given slowly is beneficial for the patient. However, a quick response cannot be anticipated, because the improve-

ment is gradual. In cases of severe anaemia it may sometimes precipitate pulmonary oedema.

Packed cell exchange transfusion suggested by Fullerton and Turner (1962) happens to be an ideal solution for combating this desperate situation without adding to the total blood volume and increasing the circulatory load. This procedure helps to tide over the crisis rapidly and future correction of anaemia can be done gradually. The whole procedure is completed in 30-60 minutes, and remarkable improvement is seen in the patient. Most important advantage of this method is that the patient is made safe in a very short period and the risk associated with failure is overcome. The Mortality rate is brought down from 20% to 3% (Fullerton and Turner, 1962). This method is associated with the few side effects like Nausea, vomiting and shivering which can be treated easily.

Exchange transfusion is not to be employed in all cases. It is only a treatment for extreme urgency like, (a) all cases of cardiac failure due to anaemia, (b) cases of severe anaemia nearing term or already in labour. The type of Anaemia need not be differentiated for purpose of exchange transfusion. In spite of the success of exchange transfusion, it has certain drawbacks. It requires large volume of donor blood obtained from different persons. So the incidence of serum jaundice and other infections may be more than in single transfusion.

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Material and Method

Thirteen cases of severe anaemia complicating pregnancy where exchange transfusion was given are described. All these cases were with haemoglobin below 20% and P.C.V. below 13%, and all were in failure.

Apart from the routine urine and stool examinations, following haematological investigations were done. Hb.%, P.C.V., R.B.C. count, blood smear.

The patient was sedated with 100 mgs. pethedine and digitalised. With bleeding set, blood was withdrawn from the antecubital vein. Simultaneously, packed cell transfusion was started in the other hand. The rate of bleeding and infusion were adjusted in such a way that the amount withdrawn was always 100 c.c. more than the amount transfused. About 600 c.c.—800 c.c. of blood was withdrawn and 500 c.c.—600 c.c. was transfused. In some cases the patient's blood packed cells were transfused to the patient on the next day. Since the reaction to transfusion was more in such cases this procedure was not adopted in all cases. The patient was carefully watched for any evidence of transfusion reaction and infection, and the proper treatment given.

Discussion

Thirteen selected bad cases of anaemia complicating pregnancy are presented, where packed cell exchange transfusion was given. All the cases were in congestive cardiac failure and one was in labour at the time of the transfusion. All of them were multiparae. Four out of the 13 were grand multiparae. Six patients developed mild to moderate transfusion reaction in the form of chest pain and rigor. They

were treated on the usual lines. All patients except one went in for premature labour and the foetal mortality was slightly more than 50%. Of the 13 cases there was one maternal death, which was the case of molar pregnancy where the evacuation was done and patient did not recover from the shock in spite of additional blood transfusion.

In 3 cases, the patients' packed cells were transfused next day, but since all of them developed rigor, this method was not followed for the rest of the cases. Contrary to the general belief, this method does not produce hypoproteinaemia because the plasma that is discarded contains only a very minimum of proteins. Following the transfusion, the patients are put on high protein diet and haematinics (iron, folic acid and vit. C). After the initial transfusion, the subsequent rise in haemoglobin percentage was quite remarkable, as can be seen from Table I.

Summary

Packed cell exchange transfusion is life saving in the following situations.

1. Severe anaemia complicating pregnancy who are in failure.
2. Severe anaemia patients nearing term.
3. Severe anaemia in patients in labour.
4. Severe anaemia in patients requiring an urgent operation.

By this method overloading of the system is avoided and failure is quickly corrected. The results of exchange transfusion are excellent and it brings down the mortality from 20% to 3%. The side effects are also few if proper care is

TABLE I
Packed Cell Exchange Transfusion

No.	Age Years	Parity	Pregnancy duration in weeks	Condition of foetus	Condition of mother	Before Transfusion			Amount with-drawn c.cs.	Amount Trans-fused c.cs.	After transfusion			After two weeks		Remarks
						Hb%	P.C.V.	RBC count in million			Hb%	P.C.V.	RBC count in million	Hb%	P.C.V.	
1.	30	4th	36	Alive	In failure	16%	7%	1.72	800	700	38%	14%	3	54%	21%	Premature delivery Baby alive
2.	27	3rd	34	Dead	In failure	Less than 10%	8%	1.21	550	500	21%	10%	3.93	48%	20%	Premature delivery Dead foetus
3.	22	3rd	30	Dead	In failure	18%	13%	2.2	750	625	44%	20%	4.2	62%	22%	I.U.D.
4.	40	8th	24	Molar Pregnancy	In failure	Less than 10%	7%	1.12	800	700	22%	11%	2.94			Mother died
5.	37	7th	38	Alive	In failure	16%	8%	1.84	650	550	34%	15%	2.92	54%	20%	Normal labour
6.	27	3rd	34	Alive	In failure	15%	7%	1.31	770	650	28%	12%	2.74	48%	17%	Premature labour
7.	29	4th	30	Dead	Failure & In labour	Less than 10%	Not done		700	600	26%	—	—	52%	20%	I.U.D.
8.	34	6th	36	Alive	In failure	14%	8%	1.24	600	550	30%	12%	2.72	52%	18%	Premature delivery
9.	32	4th	36	Alive	In failure	Do	7%	1.27	750	650	22%	11%	2.42	56%	21%	Premature delivery
10.	30	5th	30	Dead	In failure	14%	7%	1.22	650	570	28%	10%	2.2	52%	19%	I.U.D.
11.	35	8th	36	Dead	In failure	10%	7%	1.22	800	700	26%	11%	2.24	48%	17%	I.U.D.
12.	29	4th	38	Dead	In failure	14%	8%	—	750	650	32%	17%	—	56%	22%	I.U.D.
13.	34	5th	Full term	Alive	In failure	20%	9%	1.31	730	680	34%	14%	2.2	62%	24%	Normal labour

taken. The draw backs like the large volume of donor blood required and higher rate of infection for the recipient should be kept in mind.

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Group 1-20 Women, age 20-30 years. Exchange transfusion for last 2 years.

Group 11-10 Women, age 30-40 years. Exchange transfusion for more than 2 years.

Group 12-10 Women, age 40-50 years. Exchange transfusion for more than 2 years.

Group 13-10 Women, age 50-60 years. Exchange transfusion for more than 2 years.

Group 14-10 Women, age 60-70 years. Exchange transfusion for more than 2 years.

Group 15-10 Women, age 70-80 years. Exchange transfusion for more than 2 years.

Group 16-10 Women, age 80-90 years. Exchange transfusion for more than 2 years.

Group 17-10 Women, age 90-100 years. Exchange transfusion for more than 2 years.

Group 18-10 Women, age 100-110 years. Exchange transfusion for more than 2 years.

Group 19-10 Women, age 110-120 years. Exchange transfusion for more than 2 years.

Group 20-10 Women, age 120-130 years. Exchange transfusion for more than 2 years.

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Results are given in Table I and Fig. 1. It is evident from the Table that in women with the mild anaemias, exchange transfusion is not a life saving procedure. In fact, the mortality rate is significantly higher ($P < 0.05$) in these women when compared with the control subjects. However, there is no significant variation in the mortality rate of the women with the mild anaemias in Groups II, III and IV. The haematological and total cholesterol are found to be slightly raised but the rise is statistically

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