ROLE OF APROTININ IN REDUCING BLOOD LOSS IN CASES OF NORMAL DELIVERY AND POST PARTUM HAEMORRHAGE.

by

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SUMMARY

The role of Aprotinin, a broad spectrum proteinase inhibitor to prevent blood loss in normal delivery and those patients having post partum haemorrhage, has been evaluated. The drug produces significant fall in blood loss, change in Hb% and PCV in both cases. Hence its therapeutic value in these cases is suggested.

Introduction

Aprotinin was first discovered by Werle. He isolated it from bovine lung in 1930. It is a broad spectrum proteinase inhibitor. Among the enzyme systems upon which it acts are Kallikrein, trypsin, chymotrypsin, plasmin and certain proteinases released from leucocytes and damaged tissues. On the basis of these actions, it has been found that Aprotinin can play a valuable role in haemorrhage and shock, by inhibition of the Kinin-Kallikrein system, in pancreatitis by inhibition of trypsin, and in consumption coagulopathy by inhibition of plasmin. Aprotinin has been introduced comparatively recently in India by the name of Antagosan by Hoechst India Limited.

This study was undertaken to assess the role of Aprotinin in decreasing bleeding in the post-partum state.

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Material and Methods

This study was conducted in the Department of Obstetrics and Gynaecology, G. S. V. M. Medical College, Kanpur.

(1) Cases of normal deliveries: 80 cases were studied in all. The patients taken up for study were all primiparas between the age of 20-30 years and had undergone normal deliveries, not associated with any complication during pregnancy or labour. The cases were randomly divided into two groups—47 cases in each.

(A) Control Group: Immediately after delivery of the child and clamping of the cord, all blood lost vaginally was collected in a kidney tray for a period of 6 hours and then the volume measured at the end of this period. Blood samples were drawn at delivery and after 6 hours for estimation of Hb% and other haematocrit values.

(B) Trial Group: These patients received injection Aprotinin 200,000 KIU slowly

I/V as soon as the cord was clamped. Measuring of the amount of blood lost, and investigations were carried out as for the control group.

(2) Post Partum Haemorrhage: A patient was labelled as a case of post partum haemorrhage if blood loss was greater than 500 ml. These cases were randomly divided into two groups—control, and trial. The latter received injection Aprotinin 200,000 KIU of intravenously, followed by an infusion of 200,000 KIU of Aprotinin in 5% Dextrose solution. The rate was adjusted to give 50,000 KIU/hour i.e. 34 drops/minute. Assessment was carried out as for normal delivery cases. No heparin, fibrinogen or other antifibrinolytic agent was administered.

Observations and Results

A total of 120 cases were studied Out of these, 80 cases were those of normal delivery and the remaining 40 cases were of post partum haemorrhage. Half the cases in each group served as controls.

Table I shows the average blood loss, change in haemoglobin percentage (Hb) and packed cell volume (PCV) in 6 hours, in both the control and trial groups following normal delivery.

Table II shows changes in the same

TABLE I

Changes in Blood Loss Hb and PCV in Normal Delivery Cases After 6 Hours

Group		Blood loss (ml.)	Hb G%	PCV%
Control	Mean	343.75	0.521	0.8
	S.D.	±78.9	±0.3286	±0.4
Trial	Mean	240.5	0.135	0.375
	S.D.	±35.22	±0.1563	±0.5389
Percentage fall		30.4	74.04	53.125
't'		7.4815	6.63	3.957
'p'		<0.01	<0.01	<0.01

TABLE II

Changes in Blood Loss, Hb and PCV in Cases of Post Partum Haemorrhage After 6 Hours

Group		Blood loss ml.	Hb G%	PCV%
Control	Mean	826	1.02	2.75
	S.D.	±80.8	±0.2049	±0.433
Trial	Mean	653	0.62	2.0
	S.D.	±42.29	±0.1673	0.01872
Percentage fall		20.94	39.22	33.3
't'		8.264	6.6685	7.542
'p'		<0.01	<0.01	<0.01

parameters in cases of post partum haemorrhage.

The results show that there was significantly less blood loss and less decrease in Hb% and PCV in the Aprotinin treated group as compared to the control group in cases of normal delivery and post partum haemorrhage.

Discussion

To understand the effect Aprotinin has on blood loss in normal delivery, a knowledge of the haemostatic mechanism in labour is essential. According to Bonnar (1977) the coagulation system in activated during and immediately following placental separation by the local release of thromboplastins at the placental site. The depressed fibrinolytic activity of pregnancy returns to normal about fifteen minutes following delivery of the placenta. The placental site is rapidly covered by a fibrin mesh and the amount of fibrinogen deposited has been estimated at 5-10% of the total content. However, their localised coagulation is not associated with any detectable changes in various blood coagulation parameter, Aprotinin probably acts by bringing about early conversion of loose fibrin to a firmer structure, bringing about closure of open vessels.

Our results show that in cases of normal deliveries there is significant difference in the average blood loss, change in haemoglobin percentage and packed cell volume in both the groups. The parameters decreased by 30.4%, 74.4% and 53.12%. The results are comparable to those of Bhatt (1982). The findings clearly suggest that Aprotinin can be used to control bleeding in cases of post partum haemorrhage.

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