

MANAGEMENT OF DISSEMINATED INTRAVASCULAR COAGULATION BY AGGRESSIVE COMPONENT THERAPY: A CASE REPORT

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Abstract

Disseminated intravascular coagulation is a life threatening complication of severe postpartum hemorrhage. It results from washing out of all important procoagulants. A case of hemorrhagic shock following atonic postpartum hemorrhage is reported. She was treated by emergency obstetric hysterectomy and aggressive blood and blood component therapy.

Key words: *Disseminated Intravascular Coagulation (DIC), Postpartum hemorrhage (PPH), Blood component therapy, Maternal Mortality*

Introduction

Postpartum hemorrhage is a life threatening obstetric emergency, that every obstetrician faces during his professional career. It complicates 3-6% of all deliveries and accounts for 15-20% of maternal deaths in India.^[1] Anemia, malnutrition, poorly supervised deliveries, delay in transfer of patient to tertiary care centre and lack of adequate blood or component therapy contribute to the grim outcome.^[2]

Although postpartum hemorrhage is anticipated in some high risk cases, it occurs unexpectedly in many other cases.^[3] Unpredictability of primary PPH constitutes the main hazard of home deliveries. Shock following severe hemorrhage and DIC are common life threatening complications of Postpartum hemorrhage.^[4]

Timely replacement of blood and blood components in an aggressive manner can save many young women dying from this serious but

preventable complication of pregnancy and delivery.^[5]

Case report

A 25 year old female with para 3 and live 3 (P3L3), presented as an emergency with a history of full term normal delivery in a private hospital, three hours before admission to Pravara Rural Hospital. There was no history of prolonged labour, instrument assisted delivery, or retained placenta. She started having excessive per vaginal bleeding after delivery of placenta. Attending doctor treated her with intravenous Ringer lactate and plasma expanders. Atonicity of uterus was treated by oxytocic drugs. She was put on dopamine drip before shifting to Pravara Rural Hospital. On admission, her level of consciousness was altered and pupils were sluggishly reacting to light. She was in a state of shock with non recordable blood pressure, feeble pulse and tachycardia. Her general condition was poor. Uterus was flabby and there was continuous gush of per vaginal bleeding. Investigations on admission revealed that her Hb was 2.6 gms/dl, PCV was 8% and blood group was "A" positive. Renal function test and Liver function test were within normal limits. Prothrombin time was 17 seconds with control time of 12

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seconds. Platelet count was 55,000/cumm. A diagnosis of primary atonic post partum haemorrhage (PPH) was made. Considering her condition and parity, decision of subtotal emergency obstetric hysterectomy as definitive management was taken. High risk consent was obtained and patient underwent subtotal obstetric hysterectomy. Bleeding from the vault was noted before the closure, therefore the decision of additional bilateral iliac artery ligation was taken. Abdomen was closed after keeping paracolic drain.

Patient received vasopressors, IV fluids and 750 ml of packed cell volume during surgery. Patient was shifted to ICU for post operative observation. Patient developed intra abdominal bleeding (1800 ml of frank blood) in the immediate post operative period. Her vital parameters deteriorated. Prothrombin time and platelet count got derranged and were 56 seconds and 10,000/cumm respectively. She was diagnosed as a case of DIC. Patient was administered blood component therapy aggressively. She was transfused with 20 units of fresh frozen plasma, 6 units of packed cell and 4 units of platelet concentrate within 12 hours of surgery.

Patient was put on ventilatory support, dopamine infusion and broad spectrum antibiotics. Intravenous fluids were administered under central venous pressure monitoring. Arterial line was put for easy sampling of blood for blood gas analysis. Soda bicarbonate and glucose were given as per needs. Patient received total of 28 units of fresh frozen plasma, 12 units of packed cell volume and 10 units of platelet concentrates within first 48 hours of surgery. The peritoneal drainage of blood stopped after 12 hours of aggressive component therapy. Her coagulation parameters became steady after 36 hours. Her blood pressure settled down without dopamine support after 48 hours. Patient was extubated after 24 hours. She had adequate urine output. She received all supportive care. She became

fully conscious on 4th post operative day. Her vitals became normal on 4th postoperative day and she was shifted out of the ICU on 5th postoperative day. Sutures were removed on 16th post operative day. She was discharged with baby on 20th postoperative day.

Discussion

Disseminated intravascular coagulation (DIC) is a syndrome characterized by increased turnover of coagulation factors, platelet destruction, activation of fibrinolytic system, formation of thrombi in the microcirculation and uncontrolled thrombin activity. It is a life threatening complication seen during pregnancy or after delivery.^[6] The conditions where DIC may occur are abruptio placenta, thrombocytopenic purpura, jaundice in pregnancy, HELLP (hemolysis elevated liver enzymes low platlet count) syndrome, intrauterine death (IUD) of fetus, pre eclampsia eclampsia, septicemia, hypovolemic shock, amniotic fluid embolism, vesicular mole etc. These conditions trigger delicate hemostatic mechanism either by endothelial injury or by release of thromboplastin and phospholipids. Because of a hypercoaguable state in pregnancy, prevalence of any provocative factor can easily unset the normal balance, culminating in disseminated intravascular coagulopathy. Following severe post partum hemorrhage, DIC may occur due to diminished pro-coagulants or increased fibrinolytic activity. DIC can be diagnosed by clinical signs and by laboratory investigations. Bleeding from venepuncture site, abdominal surgical wound site, gastric hemorrhage, appearance of petechial hemorrhage; raise suspicion of onset of DIC. Bedside tests like bleeding time, coagulation time, clot retraction time, peripheral smear and circulating fibrinolysis test are helpful in the diagnosis of DIC. Essential laboratory tests that should be performed to ascertain the specific defects in the coagulation mechanism are platelet counts, partial

thromboplastin time, prothrombin time, fibrinogen estimation, estimation of fibrinogen degrading products and D-dimer. Consumptive coagulopathy is a serious complication of massive postpartum hemorrhage. This is a secondary phenomenon and management should be concentrated on the removal of the underlying trigger. This involves maintenance of circulatory blood volume with appropriate fluid replacement. Rapid infusion of fresh frozen plasmas is recommended at 15 ml/kg, with massive blood transfusion. One litre of fresh frozen plasma is recommended for 6 units of blood transfused. Platelet transfusion is recommended to maintain platelet count above 50,000/cumm and cryoprecipitate to be administered, if the fibrinogen level falls to less than 1 gm/dl. Recombinant factor VII has shown definitive role in the treatment of severe postpartum hemorrhage with Disseminated Intravascular Coagulation.^[7,8] It is difficult to assess the particular disorders of coagulation, due to rapid changes in the disorder from one phase to another. Volume replacement by massive whole blood transfusion is the sheet anchor of treatment to replenish fibrinogen and other pro-coagulants. A volume of 500 ml of fresh blood raises the fibrinogen level by 12.5 mg/100 ml. It also adds 10000-15000 platelets to the circulation. Fresh frozen plasma contains fibrinogen and other coagulation factors including V and VIII. It also contains anti-thrombin III, which prevents intravascular clotting. Fresh frozen plasma must be ABO compatible but need not be Rh compatible. Platelet concentrates may be given to the patient if platelet count is below 50,000/cumm. Platelets are administered rapidly over a period of 10 minutes. It should be ABO and Rh compatible. One unit of platelet transfusion raises the platelet count by 5000 to 10,000/cumm. Cryoprecipitates are rich in fibrinogen and factor VIII, XIII. One 20 ml unit contains 200 mg of fibrinogen. One bag of cryoprecipitate will raise blood fibrinogen level

by 5 mg/dl. Obstetric hysterectomy is a life saving procedure in intractable atonic Postpartum hemorrhage.^[9] At times the surgeon is in a dilemma: whether to sacrifice a woman's reproductive capacity, especially if she is nulliparous or having less than 2 children. A timely decision to perform hysterectomy can make the difference between life and death of the patient.^[10] A quick sub total hysterectomy usually saves life in conditions of acute blood loss and shock. Training of resident doctors to perform obstetric hysterectomy in an emergency situation is important. Networking of regional blood banks can help in timely procurement of requisite blood and its components in dire emergencies.

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