

# Anaesthetic Management of a Patient with Aplastic Anaemia

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**Abstract - Aplastic anaemia is a hematological disorder due to bone marrow failure characterized by pancytopenia. The anaesthetic management of these patient poses major risk because of the rarity of the disease, coagulation defects and increased risk of infection. We report a case of aplastic anaemia in a 38 years old female who undergo general anaesthesia for incision & drainage of septal abscess. After evaluating risk and benefits of operative procedure, patient was scheduled for elective surgery. Total 06 units of apheretic platelets were transfused. Hemodynamic status of the patient was stable, and postoperative period was uneventful.**

**Keywords -** Anaesthetic challenges, Anaesthetic management, Aplastic anaemia, General anaesthesia, Hematological disorders, Subarachnoid block

## Introduction

Aplastic anaemia is defined as pancytopenia with hypocellularity of bone marrow. It is due to reduction in the number of pluripotential stem cells. Etiology is either primary or secondary, many drugs like cytotoxic drugs, certain antibiotics, anticonvulsants, immunosuppressants are identified as causes of secondary aplastic anaemia [1-3]. This is a rare disorder in Europe and North America, with 2-4 new cases per million populations annually but much more common in East Asia [2]. In Bangladesh, there is no available national data on prevalence of this kind of anaemia but an earlier study conducted in private settings found 10.74% [4].

Patient presents with symptoms of bone marrow failure, usually anaemia or bleeding, and less commonly infections. Physical findings include echymoses, bleeding gums, epistaxis, bruising in with minimal trauma or blood blisters in the mouth along with infections. Blood picture demonstrates pancytopenia, low reticulocytes and often macrocytosis. Bone marrow aspiration and trephine reveal hypocellularity. Therapy for aplastic may consist of supportive care, immunosuppressive therapy or allogenic hematopoietic cell transplantation [1-3], [5].

The anaesthetic management of aplastic anaemia is challenging because of the rarity of the disease, associated pancytopenia and immunosuppression [6]. We report a case of aplastic anaemia in a 38 years old female who undergo general anaesthesia for incision & drainage of septal abscess.

## Case Presentation

A 38 years female patient, hypertensive, diabetic was admitted in the hematology department of a tertiary care hospital of private setting as a case of septal hematoma with aplastic anaemia with severe pancytopenia. Later, ENT surgeon visited the patient, and diagnosed as a case of septal abscess and planned for incision & drainage.

During pre-anesthetic checkup, weight 70 kg, pulse was 110 beats/min, BP 120/80 mm Hg, RR 20 breaths/min, severely anemic, multiple echymoses were found in different sites of the body, conjunctival hemorrhage on right eye, mild edema, SPO<sub>2</sub> was 97% in room air. Local examination revealed that there was a reddish, moderately large swelling, arising from nasal septum, obliterating both anterior nares, probably a septal abscess. Airway examination revealed mouth opening 3 three fingers, Mallampati II. On laboratory investigation, Hb was 6.9 gm/dl, RBC 2.61 M/ micro L, total WBC count 580 cells /micro L, platelets 4000/ micro L, RBS was 11.5 mmol/ l, S. creatinine 0.7 mg/ dL, blood group O positive, electrolytes normal, Prothrombin Time (PT) 15.4 sec, INR 1.36, serum albumin 2.49 gm/ dl. Chest x-ray was normal, ECG showed sinus tachycardia with heart rates of 140 beats/ min.

Patient was taken to Operation Theater with 06 hours of fasting and after nebulization with salbutamol. Pre-anaesthetic vitals were normal. 06 units of apheretic platelets were arranged for transfusion. Transfusion was started before induction of anaesthesia. After transfusion of 02 units of apheretic platelets, induction of general anaesthesia was started with propofol (1.5 mg/kg body wt) and midazolam (0.05 mg/kg body wt). Per-operative analgesia was provided by fentanyl (2 micro gram/ kg body wt). Suxamethonium was used for intubation followed by atracurium for maintenance. Intubation was done with 07 mm size endotracheal tube and there was no difficulty during intubation. After transfusion of another 02 units of apheretic platelets, and 1 gm of tranexamic acid (diluted with normal saline), surgery was started. Adrenaline soaked gauze was inserted on the wound and was held there for around 10 minutes. After confirmation of stoppage of bleeding, wound was closed

and nasal pack was done. During this period last 02 units of apheretic platelets were transfused. Duration of surgical procedure was 25 minutes. Patient's vitals were uneventful in this period. Hypotensive anaesthesia was provided using propofol, fentanyl, isoflurane and nitrous oxide. Reversal of anaesthesia was done with neostigmine, and it was smooth and uneventful. Glycopyrenium was used to decrease secretion. In the post-operative period, vitals and any bleeding from the wound were monitored carefully. There was slight oozing from the wound during post operative period. Vitals were monitored properly, nutrition and analgesia (I/ V paracetamol 15 mg/kg bd wt) were provided adequately.

The next morning, blood was sent for Complete Blood Count (CBC), results of which showed Hb 8.8 gm/ dl, RBC count 3.34 M/ micro L, total WBC 1140 cells, platelets 25,000 cells/ micro l. Outcome of surgery was satisfactory.

#### Discussion:

Patients of aplastic anaemia represent a significant challenge for surgeons and anaesthesiologists as coagulation defects, changes of blood viscosity, immunosuppression, and bone marrow insufficiency pose a major threat to the patient in the perioperative period [7-8]. The decision for surgery should be made carefully and surgery undertaken only if a patient has a life threatening or debilitating condition requiring surgical intervention [9]. Our patient suffered from septal abscess where surgical intervention was the only treatment option. To avoid perioperative complications a thorough preoperative assessment and intense preparation of the patient is mandatory before any elective surgery. Standard sterile precautions along with smooth induction and emergence should be the goal of anaesthesiologists [6]. In this patient, induction, maintenance and reversal of anaesthesia were smooth and uneventful, and all procedures were done under standard sterile precautions.

One important issue of this patient is perioperative management to decrease morbidity and mortality. Meticulous surgical hemostasis and substitution of blood products is required to avoid potential complications caused by coagulation defect. Total amount of the blood product transfused to this patient is regarded to be acceptable considering the risk of bleeding. Total 06 units of apheretic platelets were transfused to the patient. Hypotensive anaesthetic agents and adrenaline soaked nasal pack were used to control bleeding.

Another important aspect of perioperative care in these patients is the increased risk for infections due to neutropenia. It is mandatory to take aseptic precautions for all anaesthetic maneuvers including intravenous cannulation, endotracheal intubation etc, perform surgery in aseptic conditions, and perioperative antibiotic coverage is essential [9]. In this case, 3<sup>rd</sup> generation cephalosporin, Ceftriaxone was used as antibiotic, and there was no report of infection. Adequate postoperative analgesia is of great importance as it is essential for deep breathing and adequate coughing, for which secretions would not retain in the lungs, and subsequently prevent pulmonary infection [9]. Perioperative analgesia was maintained by fentanyl and paracetamol. In addition, glycopyrenium was used to reduce bronchial secretion.

#### Conclusion:

In this case, surgical procedure was done under general anaesthesia and postoperative period was uneventful. Patient with aplastic anaemia needs careful evaluation during pre-anaesthetic checkup, strict aseptic precautions along with smooth induction and emergence from general anaesthesia, proper hemostasis, infection control and good postoperative analgesia.

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