CASE REPORT

MASSIVE HAEMORRHAGE IN PATIENT AFTER REPAIR OF POST ESOPHAGECTOMY DIAPHRAGMATIC HERNIA AND A LOADING DOSE OF CLOPIDOGREL

Huma Saleem, Sara Haider Malik, Syed Raza Mehdi
Shaukat Khanum Memorial Cancer Hospital & Research Centre, Lahore-Pakistan

Postoperative diaphragmatic hernia (PDH) is an increasingly reported complication of esophageal cancer surgery. It occurs more frequently with minimally invasive techniques and very little is known about its pathogenesis. Currently, no consensus exists concerning preventive measures and its management. A 36 years old male underwent minimally invasive esophagectomy and presented with chest pain and dyspnoea in the emergency department 8 months after the procedure. He was started on acute coronary syndrome treatment protocol but was later diagnosed on CT scan to have diaphragmatic hernia through a defect in the oesophageal hiatus. As he was already loaded with dual anti platelet therapy it led to qualitative defect of the platelet which resulted in bleeding post procedure and the patient needed resuscitation with blood products. Dual anti-platelet therapy is an integral component of early management strategy in acute coronary syndrome. Chest X-ray was not helpful, but abdominal or chest computed tomography was useful for accurate diagnosis.

Keywords: Massive haemorrhage; Esophagectomy; Diaphragmatic hernia; Dual anti platelet therapy

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INTRODUCTION

Post-esophagectomy diaphragmatic hernia (PDH) has been reported as a rare complication. Yet it can be a common event with or without herniation. A higher incidence of PDH has been reported in cases of transhiatal esophagectomy (24%) than in those of the Ivor–Lewis procedure (12%) and in cases of minimally invasive surgery (4.5%) than in those of open esophagectomy (2.5%). Most of the times PDH occurs in the left chest possibly because of an opening in the left upper abdomen after gastric preparation, the bowels can slip into this space.[1]

Dual anti-platelet therapy is effective in the prevention of cerebrovascular accident, myocardial infarction and deaths resulting from athero-thrombotic events in susceptible individuals. Clopidogrel and Low-dose aspirin are used as agents of dual antiplatelet therapy. However, their use is frequently associated with gastrointestinal adverse events, which ranges from mild dyspepsia (31%) to life-threatening bleeding or even perforation (3.1%) In average-risk patients, the new anti-platelet agent, clopidogrel, causes less upper gastrointestinal adverse events than aspirin. However, there are no safety data on the use of clopidogrel in high-risk patients.[2]

CASE REPORT

We are presenting a case report of patient presenting to the Emergency room with sudden onset of shortness of breath and progressive moderate to severe pain in the epigastric region. The patient had a minimally invasive esophagectomy done six months back with uneventful perioperative course and was discharged. CXR PA view was done as part of routine workup. A complete white out on the left side of thorax raised suspicion of pneumothorax and the epigastric discomfort was attributed to Acute Coronary Syndrome. The patient was given loading dose of clopidogrel and aspirin on cardiology advice. Later on, a CT chest was obtained which demonstrated large bowel loops in the left sided thoracic cavity. A diagnosis of left diaphragmatic hernia post minimally invasive esophagectomy was made and repair of the defect was planned. Laboratory results showed Hb of 7.5 g% and platelet count of 100×10^9 per litre. By this time more than 24 hrs had already elapsed since the loading dose of clopidogrel and aspirin. Platelet units were requested but were not arranged despite repeated request being placed with the transfusion services.

On the same day the patient was brought to Operating room for surgery and underwent an uneventful induction of anaesthesia with propofol 2 mg/kg, fentanyl 1.8 mcg/kg, and Endotracheal intubation was facilitated with atracurium 0.5 mg/kg. Trachea was intubated with 7.5 I.D tube with ease. Anaesthesia was maintained with 50% oxygen in air, with 3.5% Sevoflurane. Morphine was used for intra-operative analgesia. Patient remained stable throughout the procedure from anaesthesia standstill. Procedure lasted 2.5 hours and 1 foot long ischemic bowel loops were removed from the thoracic cavity.

Blood loss was about 150 ml. Patient was transferred to HDU for postoperative care.

Haemoglobin decreased to 5.5 g% with heavy output from abdominal drain site. On the next day patient required vasopressor support for maintaining a mean arterial pressure of 60 mm of Hg. The patient remained tachycardiac through the night. A plan for emergency re-exploration of patient was made. Patient was induced with fentanyl 1.8 mcg/kg and propofol titrated to response and intubation with 7.5 ID endotracheal tube was facilitated with 0.5mg/kg atracurium.

On exploration no bleeder was identified but there was a general ooze of blood from the raw surface and about 500 ml of blood clots were removed from the abdominal cavity. Patient was transfused two pints of whole blood and two single platelet units intra-operatively. Patient was transferred back to ICU ventilated on vasopressive support. Post operatively patient's haemoglobin was 7.6 g% and platelet count was 75×10^9 per litre.

First post-operative day after re exploration, four days after the loading dose of clopidogrel, the abdominal drain output increased again to 450 ml. Haemoglobin declined to 5.3 g% with a platelet count of 45×10^9 per litter. One Mega unit of platelets was transfused which increased the platelet count to 53×10^9 per litter.

Patient was extubated 5 days after the re exploration, 6 days after loading dose of clopidogrel, abdominal drain output was still 350 ml and platelet count dwindled to 47×10^9 per litter with a haemoglobin of 9.3 g%. One Megaunit of platelets was transfused again in the ICU.

Patient was deescalated to ward level care when the haemoglobin started improving and increased to 12.3 g% and the platelet count stabilized and took up to 94×10^9 per litre and ultimately to $153X10^9$ per litre on the tenth day after the loading dose of clopidogrel. The haemoglobin improved to 13.3g% and abdominal drain output became negligible.

Patient was discharged after eleven days with a plan to follow up every month for the first three months and then as per protocol follow ups were advised.

DISCUSSION

Oesophageal cancer is the 13th most common cancer affecting 450 000 adults worldwide and its rate of occurrence is increasing rapidly. Squamous-cell carcinoma is the commonest form of Oesophageal carcinoma globally.[4]

Herniation of abdominal contents through the diaphragm into the thorax after oesophageal resection is a complication of oesophageal surgery which is recognized widely with a reported incidence of 0.4–15%. Although the pressure difference between the two abdominal and thoracic cavities is an important determinant yet the size of the hiatal defect produced as a result of surgery is a modifiable factor.[4]

Clopidogrel acts by selectively inhibiting the P2Y12 receptor on platelets thus inhibiting irreversibly the process of platelet aggregation. So, the platelets thus inhibited will remain inactive for their entire life span. This inhibition becomes evident in two hours after a single loading dose of clopidogrel. After discontinuing the treatment platelet aggregation returns to baseline gradually in about five days. Recommendations are to stop clopidogrel seven days before an elective procedure is planned but it gets difficult in emergent surgical procedures where platelet transfusion may be required to ameliorate the effects on platelets. The volume of transfusion of platelets may vary and is guided by qualitative assessment of platelets.

In retrospect, provided the emergent nature of surgery, the degree of respiratory distress and the septicaemia induced by the necrotic bowel loops in the thoracic cavity the only prudent decision would have been to proceed with surgery. The data suggesting a massive haemorrhage post clopidogrel therapy with the exception of ongoing upper gastrointestinal tract bleed is also limited thus further strengthening the decision to proceed on with the procedure.

In the past, bleeding time was measured traditionally to detect any platelet dysfunction and thus the possibility of bleeding but it is no longer considered as a reliable predictor.[5] Now a days PFA - 100 and TEG are considered reliable in assessing the qualitative function of the platelets.[6]

Diaphragmatic hernia though is a less common complication of minimally invasive esophagectomy as compared to the trans-hiatal approach, yet the presentation can be dramatic as seen in this case and misdiagnosis in the first place can pose serious aftermaths for the patient. We recommend getting a detailed imaging investigation done for the patient prior to embarking on a particular treatment protocol. In case an emergent surgery is required for a patient who either has had a loading dose or already on clopidogrel, in addition to the invasive monitoring platelet transfusion must be arranged as it is not the number but the quality of platelets. This patient should have received platelet transfusion pre-operative as well as in the postoperative period.

Our case scenario presents the short comings in organizing the blood products in time and non-availability of qualitative monitors of platelet

function. We were relying on the platelet count as an indicator which is not a marker of platelet function in this case. A full diagnostic workup should have been undertaken before instituting definitive treatment.

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Address for Correspondence:

Dr. Huma Saleem, Department of Anaesthesia & Pain Management, Shaukat Khanum Memorial Cancer Hospital & Research Centre, Lahore-Pakistan
Cell: +92 333 439 5819
Email: humasaleem665@gmail.com