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A Case Study on Anaesthesia of a Patient with Pancreatic Necrosis in Bangladesh

Md Ariful Hoque[1,5], Shawon Kumar Das[2], Suhel Ahmed[3], Shamima Nasrin Shadia[4,5] and Moazzem Hossain[5*]

[1] Specialist, Anaesthesiology, Square Hospital, Dhaka, Bangladesh

[2]Specialist, Anaesthesiology, Square Hospital, Dhaka, Bangladesh

[3] Specialist, Anaesthesiology, Square Hospital, Dhaka, Bangladesh

[4]Armed Forces Institute of Pathology, Dhaka Cantonment, Dhaka, Bangladeh

[5]Chairman, Institute of Allergy and Clinical Immunology of Bangladesh, Dhaka

ABSTRACT

Acute pancreatitis causes devastating changes in body involves organ dysfunction, metabolic imbalance, electrolyte disturbance as well as acid base disorder. Pancreatic necrosis complicates the condition. Patient may develops systemic inflammatory response syndrome (SIRS) followed by sepsis. Laparotomy and removal of necrotic part along with peritoneal toileting is the surgical management.

We present a case of a 45 years old male admitted with a diagnosis of pancreatic necrosis is scheduled for exploratory laparotomy followed by peritoneal toileting along with excision of necrotic portion. Maintaining a smooth anesthesia is a challenge during surgery. Disease and its complications along with surgery produce extreme condition for anesthesiologist. Patient sometimes response badly therefore may need postoperative intensive care support. Meticulous fluid administration, inotrope support, choice of proper intraoperative drugs, monitoring vital signs including urine output, blood gas analysis- these should be focused during anaesthesia.

***Corresponding author**

Moazzem Hossain, 5Chairman, Institute of Allergy and Clinical Immunology of Bangladesh, Dhaka. E-mail: moazzem.iacib@gmail.com

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Abbreviations: AP: Acute pancreatitis, OR: Operation Room, SIRS: Systemic Inflammatory response syndrome, SEP: Systemic Inflammatory Response, O2: Fraction of inspired, ICU : Intensive Care Unit, AKI: Acute Kidney Injury

Introduction

Acute pancreatitis (AP) has increased in incidence reaching up to 0.7 hospitalizations for 1000 inhabitants in the last decade in the US [1]. In about 80% of the patients AP is mild and self-limiting, but in up to 20% it may run a severe course with pancreatic parenchymal and/or peripancreatic tissue necrosis, responsible for substantial morbidity and mortality rate up to 27% [2]. The major cause of death is the necrosis of the pamcreatic tissue, which is associated with a poor prognosis: mortality is approximately 15% in patients with necrotizing pancreatitis (NP) and up to 30-39% in those with infected necrosis which occurs at some point in the clinical course in about a third of patients with necrosis [3-5]. Intervention is generally required for pancreatic necrosis and less commonly in patients with sterile necrosis who are symptomatic, especially in case of gastric or duodenal outlet or biliary obstruction. The traditional treatment so far has been open surgical necrosectomy that provides a wide access to infection, but it is highly invasive and associated with reported morbidity rates of 34-95% and mortality rate of 11-39%, due to the physiologic stress of the laparotomic debridment [6-9].

Case Presentation

Mr. Kuddus Khan ,45 years of age male diagnosed as a case of pancreatic necrosis admitted department of surgery, square hospital is scheduled for exploratory laparotomy followed by peritoneal toileting along with excision of necrotic portion. Before transfer to operation room (OR), his clinical condition was complicated by septic shock, type 2 respiratory failure, AKI (S. creatinine 6.3). Diabetes mellitus (RBS- 16.8) is a past history. Initially he was diagnosed as a case of acute pancreatitis further developed pancreatic necrosis. Patient was in ventilator with Fi .5, SpO2 95%, assist control mode. Noradrenaline with 0.1- 0.2 microgram/kg/min was infused to maintain normal Blood pressure (BP). Patient has tachycardia(120-135/min). Cardiac evaluation was normal except ECG that reveals tachycardia. Patient attendant was counseled about the risk of anesthesia along with surgery. The key points in anesthesia for such patients reside in the perioperative circulatory management as well as risk evaluation and the effective administration of all potential complications intraoperatively. Therefore, expert consultation, right decision at right situation will undoubtedly benefits such patient.

After shifting to operation room (OR), patient's Endotracheal Tube (ET tube) was attested with ventilator. We maintain amnesia with isoflurane. Analgesic and muscle relaxant were fentanyl and vecuronium respectively. Exploratory laparotomy followed by peritoneal toileting and excision of necrotic portion were done appropriately. Blood Pressure (BP) was maintained with noradrenaline 0.2-0.3 microgram/kg/min. Per-operative blood glucose was 15mmol/l, urine output 20ml/hour. Patient was shifted to Intensive care unit (ICU) with ventilator and inotropic support as mentioned above. After shifting to ICU his Blood pressure (BP) was 110/75 mmHg, Heart Rate (HR) 80/min, SpO_2 98% with fiO_2 0.6.

Discussion

Pancreatic necrosis is a serious infection usually associated with acute pancreatitis. During recurring attacks of pancreatitis, tissue within the pancreas may die (necrotize) and later become infected. This condition is called acute necrotizing pancreatitis.

When the pancreas gets inflamed, it may leak digestive enzymes into the pancreas itself. In consequence that harms the pancreas and can lead to pancreatitis. When this damage is severe, pancreas may not receive enough blood and oxygen to survive. Pancreatic necrosis (NP) happens when a part of the pancreas or the tissue around it dies from inflammation.

As per current perceptive, acute pancreatitis is triggered by obstruction of pancreatic duct and pancreatic acinar cells constitute the seat of injury. Acute necrotising pancreatitis results from premature activation of pancreatic enzymes occurs because of the action of lysosomes upon zymogen granules inside the acinar sells. Cathepsin B secreted by lysosomes play an important role in the process. This fact has been established by in vivo studies upon the Cathepsin B knockout mice. Premature activated pancreatic enzymes induce the auto digestion of pancreatic parenchyma leading to pancreatic abscess and peri-pancreatic fat necrosis occur. The extend of these changes is directly related to the severity of an attack. In mild cases, intestinal edema with inflammation of inflammatory cells is seen while severe cases are characterized by extensive necrosis, thrombosis of intraparenchymal vessels vascular disruption and intraparenchymal hemorrhage. About two third of the pancreatic necrosis cases occurred in the first week of systemic inflammatory response (SEP) which may associated with early multi organ dysfunction and extension of necrosis. More than 50% of the patient who survived his initial phase of systemic insult are at risk for secondary necrosis of peri pancreatic fluid collection after a few weeks of onset. Some other causes are trauma of the pancreas, pancreatic tumor, high level of calcium in blood, very high level of blood fats, autoimmune diseases.

Acute pancreatitis is a common condition in which 70% of patients will recover with simple medical management. For patients who develop extensive or infected pancreatic necrosis the outcome is significantly different with a high morbidity and mortality [10]. Patient with acute necrotising pancreatitis or abscess receives antibiotics, interstellar fluid, analgesics and other medications as indicated. Surgery in the operation Room is the usual course of treatment to drain the infected area patient may have a drain placed within the pancreas to aid it post-surgical removal of infected fluids. If necrosis occurs the necrotic part will be removed.

Infected necrosis is generally accepted as a strong indication for surgery [11]. This has developed not from randomized data but observational studies over time that seemed to show a reduction in the previously reported mortality [12-14]. A small number of recent reports have attempted to cast doubt on whether all patients with infected pancreatic necrosis should undergo surgery [15-17]. Necrotizing pancreatitis (NP) is the most alarming evolution associated to a poor prognosis, mortality is approximately 15% and up to 30–39% in case of infected necrosis, which is the major cause of death. Traditionally the most widely used approach to infected necrosis has been open surgical necro sectomy, but it is burdened by high morbidity (34–95%) and mortality (11–39%) rates.

Conclusion

Most of the patients treated traditionally (nonoperatively), if did not change significantly. Early surgical procedures needed. When possible, prolonged observation allows selection of patients who are likely to benefit from delayed surgery or nonoperative treatment. The role of surgery in management includes relieving biliary obstruction, minimizing regional & distal organ damage, removing infected intra and extra-pancreatic necrosis. Surgery is the mainstay of treatment for these patients but several unresolved issues remain including who requires surgery, when is the optimal time to intervene and what technique should be used. By this away we can reduce morbidity and mortality of Infected necrosis patient.

Consent: Informed, written consent was taken from the patient prior to preparation for surgery.

Ethical Clearance: Informed written consent of the patient was taken and written permission has also been taken from concerned department where study was undertaken. Ethical clearance was taken from Square Hospital.

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