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Case Report

Anesthetic Management of Large Hydatid Cyst Removal: A Case Report

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Abstract: Anesthetic management approach to achieve optimal outcome in hydatid cyst removal surgery is essential to prevent the dreaded intraoperative complication the anaphylaxis. Hydatid cysts are parasitic infections caused by Echinococcus granulosus. Laparoscopic large hydatid Cyst removal surgeries offer enhanced post-surgery benefits. Anesthesia plays a crucial role in ensuring optimal patient outcomes. This case report discusses the essential aspects of anesthetic management for such procedures.

Keywords: Hydatid cyst, Laparoscopic removal, hypernatremia, anaphylaxis.

INTRODUCTION

Hydatid cysts are parasitic infections caused by Echinococcus granulosus and primarily affect the liver and other organs, such as the spleen [1]. Surgical intervention, particularly laparoscopy, is a preferred approach as it offers enhanced postoperative benefits such as decreased pain, better cosmesis, early ambulation and discharge home [2]. Anesthesia plays a crucial role in ensuring optimal patient outcomes during laparoscopic large hydatid cyst removal surgeries. This case report aims to discuss the essential aspects of anesthetic management for such procedures.

CASE REPORT

A young male patient aging 46 years presented with complaints of pain and distention of the abdomen aggravated since 3 months. He also complained of breathlessness upon his usual activities. The abdominal contract tomography showed a large cyst measuring 15x18 CM with well differentiated rim occupying entire lobe of right liver. He was planned for laparoscopic hydatid cyst drainage and removal. Patient was worked up for General anesthesia. All the necessary investigations showed no abnormalities. Mandatory monitors like ECG. blood pressure, pulse-oxymetry, temperature, $ETCO_2$ were employed in the operating room. Intravenous access was achieved by 18 G and 20 G peripheral venous cannulas in each hand and ringers lactate was started. Premedication was done using Inj: Midazolam 0.1 mg/kg and Inj: Fentanyl 150 mcg/kg following a standard general anesthesia protocol after preoxygenation for 3 minutes patient was induced with inj: propofol 150 mg/kg and Inj atracurium 25 mg/kg cuffed endotracheal tube of size 8 was introduced after direct laryngoscopy in the first attempt. Maintenance of anesthesia was done with air: oxygen in ratio of 1:1 and sevoflurane at minimum alveolar concentration of 1. Maintenance doses of atracurium for muscle paralysis and analgesia with fentanyl were repeated. The minimal blood loss of 100 ml was noted at the end of the surgery. Surgery lasted for 2 hours and 30 minutes. During the drainage of the cyst contents 0.3 % normal saline was irrigates through the cyst wall and drained by the surgical team. Intraoperative serum sodium was sent which was with in normal limits. Rest of the surgery was uneventful. After the adequate extubation criteria are met the patient was reversed with inj: Neostigmine and glycopyrrolate and extubated. At PACU patient was comfortable and maintaining stable vitals. pain was managed with injection Acetaminophen 1000gm TDS.

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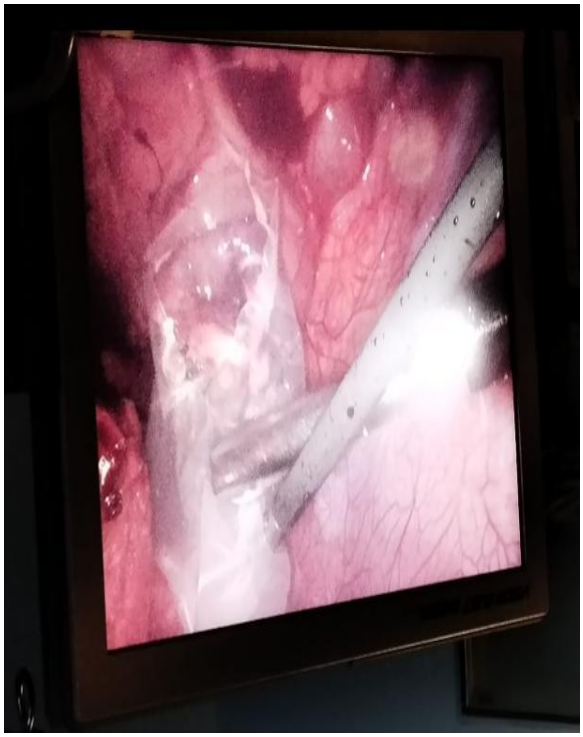

Figure 1: Large cyst wall after aspiration of contents

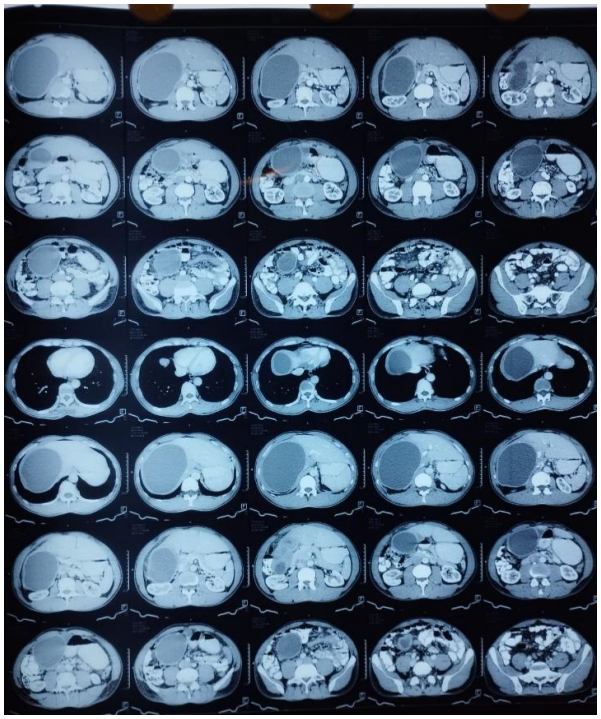

Figure 2: Large cyst as seen in CT

DISCUSSION

Preoperative evaluation is crucial in determining a patient's fitness for surgery. Comprehensive assessment should include past history airway assessment, investigations, and imaging studies to evaluate the extent of disease involvement [7]. These evaluations help identify any comorbidities that may increase perioperative risks. Informed consent is vital to ensure that patients fully understand the benefits and potential risks associated with the procedure [1]. The plan of anesthesia depends on various factors such as patient characteristics and procedure. General anesthesia is commonly employed for laparoscopic large hydatid cyst removal surgeries due to its ability to provide profound muscle relaxation required for optimal surgical exposure [2]. However, regional anesthesia techniques can also be used as part of a multimodal approach. During surgery, close monitoring of vital signs, including heart rate, blood pressure, oxygen saturation, and end-tidal carbon dioxide levels, is essential [2]. Incidence of rupture of hydatid cyst intraperitoneally ranges from 0.9to 16% [6]. The larger the cyst more are the chances for its rupture [3]. Intraoperative challenges may arise due to the possibility of cyst rupture or spillage during manipulation. Even the cyst manipulation without actual rupture can lead to anaphylaxis. Which can present as hypotension, tachycardia, raised peak and plateau pressure [4]. This is a IgE mediated reaction ranging from mild allergy to the fatal shock, convulsions, coma. Therefore, meticulous care must be taken to minimize the dissemination of cyst contents and prevent anaphylaxis. Optimal preparation to attend the allergic reaction is necessary. Which include Adrenaline, steroids, antihistaminics, colloids and crystalloids. Preoperative admission of anti histaminics and steroids is also followed [5]. Acute hypernatremia is a foreseeable complication while irrigation of the cyst cavity with hypertonic saline though rare careful observation is must. Signs of hypernatremia like altered consciousness, hypertension, changes in the ECG should be looked for. Postoperative pain management is crucial for patient comfort and early mobilization. A multimodal analgesic approach combining opioids with non-opioid medications such as nonsteroidal anti-inflammatory drugs (NSAIDs) or acetaminophen is typically employed [1]. Regional anesthesia techniques such as epidural or transverses abdominis plane blocks can also provide effective pain relief. Complications following laparoscopic large hydatid cyst removal surgeries may include infection, cyst recurrence, biliary leakage formation, or anaphylaxis due to Echinococcus antigens release [7]. Prompt recognition and appropriate management are essential in ensuring successful postoperative outcomes. Close monitoring for signs of infection or bile leak should continue during the postoperative period.

Key learning points:

pre operative	intaoperative	postoperative
• History of seizures due to associated neurocysticercosis • Chest skiagram to rule out similar cysts in the lungs • Size and location of the cyst • Operating room preparation to tackle anaphylaxis (Iv cannula, antihistamines, steroids, adrenaline and other vasoactive agents , crash-cart, with defibrillator)	• Monitoring for angioedema, erythema , bronchospasm along with vital signs • Airway equipment , oxygen (in case of regional anesthesia) • Focus on timing and events related to anaphylaxis (cyst packing, irrigation and suction of cyst contents,washing with hypertonic saline) • Airway management to accommodate peak airway pressures of laparoscopy	• Multimodal pain management • Management of postoperative complications (infection, trauma to biliary tract, surgical emphysema)

CONCLUSION

In conclusion, anesthetic management plays a critical role in the successful outcome of laparoscopic large hydatid cyst removal surgeries. By considering patient-specific factors and employing appropriate anesthetic techniques, healthcare providers can ensure optimal care and improved outcomes for patients undergoing these procedures.

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