

Anesthetic Management of a Septic Neonate Undergoing Emergency Repair of a Ruptured Meningomyelocele

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ABSTRACT

Meningomyelocele (MMC) is a neural tube defect associated with significant perioperative challenges, particularly when complicated by rupture and sepsis. Anesthetic management in such neonates is demanding due to physiological immaturity, hemodynamic instability, and risks of hypothermia and metabolic derangements. We report the perioperative anesthetic management of a 16-day-old preterm neonate weighing 1.72 kg with a ruptured lumbosacral meningomyelocele and clinical sepsis who underwent emergency surgical repair. The neonate presented with fever, tachycardia, poor feeding, metabolic acidosis, hypoglycemia, and purulent discharge from the lesion. After preoperative stabilization, anesthesia was induced in the lateral position using fentanyl and propofol, followed by tracheal intubation and prone positioning. Intraoperative management focused on temperature regulation, hemodynamic stability, and glucose control. Postoperatively, the neonate was monitored in the neonatal intensive care unit with a favorable outcome. Anesthetic management of ruptured meningomyelocele in a septic neonate requires meticulous planning, careful positioning, strict asepsis, and vigilant perioperative monitoring. Early stabilization and multidisciplinary coordination are essential for successful outcomes.

Introduction

Meningomyelocele is the most severe form of spinal dysraphism, characterized by herniation of meninges and neural tissue through a vertebral defect. Rupture of the sac leads to cerebrospinal fluid leakage and significantly increases the risk of meningitis and neonatal sepsis. Early surgical closure is recommended to prevent infection and neurological deterioration. The presence of sepsis further complicates anesthetic management due to immature organ systems, labile hemodynamics, hypoglycemia, and difficulty in airway management, especially when lateral or prone positioning is required [1-2].

Case Report

A 16-day-old preterm female neonate weighing 1.72 kg was referred with a ruptured lumbosacral meningomyelocele, fever, and poor feeding. On examination, the neonate was lethargic, tachycardic, febrile, and dehydrated with prolonged capillary refill time. The swelling measured approximately 28 × 7 × 44 mm with an exposed neural placode and purulent discharge.

Laboratory investigations revealed leukocytosis (12,600/mm³), elevated C-reactive protein (46 mg/L), metabolic acidosis (pH 7.26, lactate 4.5 mmol/L), and

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hypoglycemia (48 mg/dL). A diagnosis of neonatal sepsis was made.

Preoperative stabilization included thermal care under a radiant warmer, correction of hypoglycemia with 10% dextrose, cautious fluid boluses, electrolyte optimization, and administration of broad-spectrum antibiotics. Anticipating a full stomach and difficult airway due to positioning, anesthesia was induced in the left lateral position using fentanyl (2 µg/kg) and titrated propofol (2 mg/kg). Atracurium (0.5 mg/kg) facilitated tracheal intubation with a 3.0 mm uncuffed endotracheal tube using video-laryngoscopy.

The neonate was carefully positioned prone after securing the airway. Anesthesia was maintained with sevoflurane in an oxygen-air mixture, warmed intravenous fluids, glucose infusion, and active temperature management. A transient episode of hypotension was managed with a crystalloid bolus and packed red blood cell transfusion (15 mL/kg). Surgery lasted approximately 120 minutes with minimal blood loss.

Postoperatively, the neonate was extubated uneventfully and shifted to the neonatal intensive care unit for close monitoring. Recovery was satisfactory.

Discussion

Anesthesia for meningocele repair in septic neonates poses unique challenges, including hemodynamic instability, hypothermia, metabolic disturbances, and airway management difficulties due to required positioning. Maintenance of normothermia, careful induction, meticulous positioning, and vigilant postoperative care are critical components of successful management [3-6].

Conclusion

Ruptured meningocele with neonatal sepsis represents a high-risk scenario for anesthesiologists. Structured perioperative stabilization, cautious anesthetic techniques, and multidisciplinary care can significantly improve outcomes.

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