Case Report

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Caudal Block with monitored anaesthesia care for bilateral orchidopexy in 5 year old child having Down syndrome (Trisomy 21): A case report

Address for correspondence:
Dr. Upendra Kumar,
Department of Anaesthesiology,
Government Medical College,
Kota – 324010, Rajasthan,
India. Email ID:
drupendra1010@gmail.com

Chetan Suwalka, S. C. Dulara, Upendra Kumar*
Department of Anaesthesiology, Government Medical College, Kota – 324010, Rajasthan, India

ABSTRACT

Children with Down syndrome have an increased risk of cryptorchidism. We are reporting a case of 5 year - old male child weighing 15 kg, a known case of Down syndrome with congenital hypothyroidism with complaint of bilateral empty scrotal sac. In our case, a detailed preoperative assessment and optimization was done. In preoperative assessment atlantoaxial instability was not observed and for cardiovascular anomalies 2D echo report showed normal mitral, tricuspid, aortic and pulmonary valve with intact atrial and ventricular septum. Anaesthetic management was planned with possible anticipation for atlantoaxial abnormality and difficult airway, sensitivity to drugs and ventilation challenges during surgery. A meticulous anaesthetic management by caudal block with monitored anaesthesia care resulted in a good peri-operative outcome in our case.

Key words: Caudal Block, Down Syndrome, Orchidopexy, Trisomy 21

INTRODUCTION

Down syndrome is a congenital anomaly occurring due to extra chromosome attached to Chromosome 21 (Trisomy 21)[1]. These patients are of special concern because of their associated problem with regard to respiratory, endocrine system, cardiovascular system and other systemic problems[2]. A study of Postoperative analgesia for neonates with Down syndrome in 2011 used single shot caudal block[3]. This patient was suffering from Down syndrome, posted for bilateral orchidopexy and caudal block was planned for anaesthesia. Caudal Block with monitored anaesthesia care was used for meticulous anaesthetic management.

CASE REPORT

A 5 year - old male child weighing 15 kg, ASA II, already a known case of Down syndrome with congenital hypothyroidism admitted in department of paediatric surgery with complaint of bilateral empty scrotal sac. Parents gave history of mental retardation and abnormal gait of the child. In preanaesthetic check-up pulse rate was 90/min and blood pressure was 96/66 mmHg. On auscultation lung fields were bilaterally clear and heart sounds S_1 and S_2 were normal. Laboratory investigations were haemoglobin- 10.4 gm/dl, Platelet Count- 380,000/µL, Blood Urea- 17 mg/dl, Serum Creatinine- 0.6 mg/dl and Random Blood Glucose- 121 mg/dl. Child had no any previous surgical history. Special test included 2D Echo to rule out associated congenital cardiac condition which showed normal mitral, tricuspid, aortic and pulmonary valve with intact atrial and ventricular septum. Thyroid profile showed T3-1.48 ng/ml, T4-11.2 µg/dl and TSH-1.93 µIU/ml with patient on medication 25 µg Thyroxine tablet daily. X-ray chest revealed no abnormal finding. During general examination it was observed that physical appearance of patient had flat occiput, mongoloid upward slanted prominent eye with prominent epicentric folds, protruding large tongue and widely spaced teeth. Anticipating difficult airway, all precautions were duly taken preoperatively. Preoperative fasting was observed

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for 6 hour for liquids. In the pre-operative room after venous cannulation, injection metoclopramide 3mg IV and injection midazolam 0.5mg was given 1 hour before surgery. Then the patient was taken into operation theatre and baseline vital parameters were observed and recorded. Injection glycopyrrolate 0.06 mg and injection ketamine 10 mg was given intravenously to calm the children. Precordial stethoscope was fixed. Then patient was positioned in left lateral position and under all aseptic precautions a hypodermic needle was inserted in caudal epidural space for caudal block and 10 ml lignocaine (1%) was injected. Sedation was maintained with sevoflurane 2% in oxygen initially for few minutes with bag and mask ventilation through JR circuit till the return of spontaneous breathing efforts. Effect of regional blockade was confirmed with establishment of paresis in both lower limbs. Then surgeon was allowed to start the surgery. All monitoring parameters remained within normal limit during the surgery of approximately 40 minutes. Recovery from anaesthesia was smooth with all monitoring parameter within normal limits. For postoperative analgesia rectal paracetamol 325 mg suppositories was inserted. The patient remained stable in the post anaesthetic care unit.

DISCUSSION

Down syndrome is a congenital anomaly occurring due to extra chromosome attached to Chromosome 21. This is also called as Trisomy 21. Trisomy 21 is the commonest chromosomal abnormality that affects people with an incidence of 1:800 live births[1]. The incidence of undescended testes in down syndrome was found to be 6.52% (24/368), with 4.35% (16/368) being acquired undescended or ascending testes[4]. Down syndrome is associated with anomalies in various systems. Cardiovascular, respiratory and central nervous system may be involved in Down syndrome as an isolated system involvement or multiple system involvement, thus posing several anaesthetic challenges. Clinical features of Down syndrome include microcephaly, macroglossia, and ligamentous laxity at atlanto occipital joint and subglottic stenosis, which can pose problems for securing airway. Atlantoaxial instability has been reported in 20% of patients and spinal cord compression in 2%[2]. Typical signs and symptoms of neck instability include gait instability, radiculopathy, and bowel or bladder incontinence[5]. Even if the children are not symptomatic, be cautious in neck manipulation. Down syndrome is associated with several types of congenital heart defects such as endocardial cushion defects (40%), ventricular septal defects, atrial septal defects (30-60%), patent ductus arteriosus (12%) and Tetralogy of fallot (8%)[6]. Therefore, it is important that echocardiography should be performed in these cases. Echocardiography report showed normal mitral, tricuspid, aortic and pulmonary valve and atrial and ventricular septum were intact. Gastrointestinal anomalies associated are duodenal stenosis, gastro esophageal reflux, imperforate anus and Hirschsprung's disease[7]. Therefore; premedication should include prophylaxis to prevent gastro esophageal reflux. Down syndrome individuals have more propensities for organ specific autoimmune dysfunction, in particular congenital hypothyroidism. In fact, 40% of adults with trisomy 21 have evidence of hypothyroidism[8]. This child was also on tablet thyroxine 25 µg once daily. About 60% of children experience presurgical anxiety and children suffering from Down syndrome are even more likely to be affected. Many have had prior surgeries and other unpleasant medical encounters as well as varying degrees of mental deficits. Expect to spend extra time trying to establish some sort of rapport and calming these patients, always take time to assess children for anxiety. If patients cannot be calmed by talking or distraction, premedication with benzodiazepines or alpha-2 agonists may help. This patient was given midazolam and ketamine and patient remained calm during surgery. Depending on hospital policy, it may also be helpful to have a parent to accompany the children into the O.R. for induction. Bradycardia is common during induction of anaesthesia in children with Down syndrome. If the heart rate does not recover, atropine may be useful[6]. If an I.V. line is not in place, the drug can be injected sublingually for fast effect. Patients with increased risk for obstructive sleep apnea should not be discharged to an unmonitored setting until they are no longer at risk for respiratory depression.

CONCLUSION

In our case, a detailed preoperative assessment and optimization was done. However, child was evaluated thoroughly and anaesthetic management was planned with anticipation for difficult airway, sensitivity to drugs and ventilation challenges during surgery. Thyroxine tablet was continued for hypothyroidism. Caudal block with monitored anaesthesia care resulted a good perioperative outcome in this patient having congenital Down syndrome operated for orchedopexy.

Hence it is concluded that in children suffering from Down syndrome without atlantoaxial instability and cardiovascular anomalies, Caudal block with monitored anaesthesia care can be given safely for perineal surgery.

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