Anaesthesia in a Child with Autistic Spectrum Disorder and Obesity: A Case report

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ABSTRACT

Autism is a neurodevelopmental disorder that manifests in the first three years of life. Children may attend hospital for diagnostic and therapeutic procedures at different points of their lives. Due to increased anxiety of patient and family members, uncooperative or combative behaviour, these patients are considered to be difficult cases for anaesthesia. Overweight and obesity in children has become endemic and perioperative complications are more frequent in these patients. A versatile approach should be adopted for management of these patients.

Keywords: *autistic spectrum disorder; obesity, difficult airway; premedication.*

INTRODUCTION

Children with autistic spectrum disorder may attend hospital for diagnostic and therapeutic procedures. They require special consideration for communication and choice of anaesthetic technique. Overweight and obesity has been considered the so-called illness of the century. Anaesthetic management of a child with autism and obesity is challenging and proper management is required to prevent peri-operative complications. We report a case of a child with ASD and obesity who had anaesthesia for neck surgery.

CASE REPORT

A 14-year-old girl, weighing 95kg, was posted for excision of the infected sinus tract at the nape of the neck. She was obese and was also diagnosed with autistic spectrum disorder (ASD). She had a history of seizure disorder and had taken sodium valproate for 4 years which was discontinued 5 years ago. She had developmental delay, abnormal aggressive behaviour at times and lack of social interaction due to ASD.

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During pre-anaesthetic check-up, she had stable vitals and all the routine blood investigations were within normal limit. She was obese class II with BMI (body mass index) of 38.3 kg/m^2. Her daily physical activity was significantly restricted. She had short and thick neck, thyromental distance was <6.5cm and neck mobility was restricted. Mallampati score, interincisor gap and prognathic ability could not be assessed as a result of her behaviour. However, difficult airway and difficult mask ventilation was anticipated. Venous access was also noted to be difficult. She was kept nil per oral for 6 hours for solid food and 2 hours for clear liquid before surgery.

She came directly to the preoperative room with her grandfather and mother on the morning of surgery. Oral midazolam 10mg and ketamine 100mg was given to her mixed with 5ml of clear apple juice for premedication. She was monitored for the next 45minutes while she was left with her grandfather, and was approached when she was mildly sedated. Intravenous cannulation was done on right hand with 22G cannula, immediately after which inj. midazolam 1mg, inj. fentanyl 50mcg and inj glycopyrolate were given intravenously. She was then shifted to the operation theatre in the trolley and monitors were attached, subsequently.

In the operation theatre, oxygenation was maintained on facemask with O_2 at 4L/min.

ECG, SPO_2, blood pressure and respiration were monitored throughout the surgery. Intravenous ringer's lactate was started and patient was kept in left lateral position and supported by an assistant. Induction was done with inj. Propofol 50 mg, ketamine 40mg and fentanyl 50mcg. Local anaesthesia infiltration was done using 2% lignocaine with adrenaline (1:200000). The total duration of surgery was 30 minutes during which propofol 40mg was given in divided doses. Inj. Paracetamol 1gm was given for postoperative analgesia. She was shifted to postoperative unit after she responded to arousal.

She was kept in post anaesthetic care unit and was allowed to be accompanied by her grandfather and mother. Intravenous cannula was removed and patient was discharged after 6 hours when she achieved all the criteria for discharge.

DISCUSSION

Autism is a neurodevelopmental disorder that manifests in the first three years of life. The group of pervasive developmental disorders (PDDs), also termed autism spectrum disorders (ASDs), includes autism as well as PDD-not otherwise specified (PDD-NOS) and Asperger's disorder. ASDs are observed in all populations with an incidence of 6 cases per 1000, about four times more males diagnosed than females.[1] Approximately 7% of these children have associated mitochondrial dysfunction resulting in physical, behavioral, and cognitive impairment. Children with autism have a theory of mind deficit—they have difficulty seeing another's perspective, difficulty in determining the intentions of others, and lack understanding of how their behaviour affects those around them. They have difficulty with social communication, social interaction and social imagination.

They may attend hospital for various reasons such as investigation, medical management, or surgery at different point of their lives. Due to increased anxiety of patient and family members, uncooperative or combative behaviour, or in extreme cases very violent behaviour of patients, these children are considered difficult patients. The anesthesiologist should recognize these difficult cases and prepare for the necessary interventions beforehand and appropriate pre-anesthetic consultation and careful planning should be done. The anesthetic risks and available options should be thoroughly discussed with parents/care taker and the surgical team.

A versatile approach should be adopted. Children with ASD should be placed first on the operation list, so as to minimize the effect of waiting and starvation. During preanesthetic assessment child's special needs, likes, dislikes and phobias should be noted. Families should be encouraged to bring to the hospital any toys or other familiar "comfort" objects which they know will calm their child. The presence of a familiar carer and maintenance of physical comfort are also important. Premedication help modify behaviour and improve overall compliance by providing amnesia, anxiolysis and sedation. Local anesthtic cream to facilitate intravenous cannulation should be encouraged. Oral midazolam and ketamine are the most frequently used drugs for premedication and combination of these drugs are preferred as they improve compliance with minimal side effects.[4] Midazolam can be associated with adverse psychotropic effects including disinhibition and can cause dysphoria when given in higher dose.[,] Midazolam at a dose of 0.25-1 mg/kg, maximum of 20mg, can be given per oral. Similarly ketamine can be given at a dose of 2-5mg/kg.[3] The use of alpha-adrenergic agonist drugs like dexmedetomidine and clonidine has been described with a lot of success. Use of clonidine orally in the dose range of 2-4mcg/kg has been shown to be sedative and anxiolytic in children with ASD.[6,] We used the combination of oral midazolam and ketamine in our patient and mixed it with 5ml of apple juice, given to her by her grandfather, in her favourite glass, which she drank without much agitation.

Perioperative recommendations include minimal fasting, good hydration, maintenance of normal blood glucose, body temperature, acid base balance, good analgesia and avoidance of oxidative stress.[3] Inhalation agents like isoflurane and sevoflurane have been used successfully for maintenance of anesthesia. Similarly, intravenous agents like propofol, sodium thiopentone and etomidate have been used in different cases.

Though Muravchick and Levy cautioned on the use of propofol infusion in patients with ASD, propofol for induction has been documented to be safe in literature.[3] We used propofol for induction in our patient combined with fentanyl and ketamine. Use of regional anesthesia should be considered wherever possible as it helps to decrease the use of systemic opioids and prevents thromboembolism.[10]

The goal of postoperative care should be a rapid smooth recovery and early discharge. Any intravenous cannula, nasogastric tube or monitoring apparatus should be well secured and bandaged to prevent their dislodgement[3] and should be removed as soon as possible to decrease the distress to the child.

Positioning presents a challenge and care must be taken to prevent pressure necrosis especially during prolonged procedures. Obese children require a longer duration of stay in PACU after their procedures as there is an increased incidence of airway obstruction. Since our patient had associated ASD, we discharged her after 6 hours stay in PACU, when she was fully awake and free from pain, nausea and vomiting.

Therefore, in conclusion, the care of children with autism and obesity can be challenging, but with perseverance, preparation and flexibility these children can have a smooth, safe and comfortable perioperative period.

CONSENT: Case Report Consent Form was signed by the patient

CONFLICT OF INTEREST: None

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