International Journal of Medical Anesthesiology

E-ISSN: 2664-3774
P-ISSN: 2664-3766
www.anesthesiologypaper.com
IJMA 2021; 4(3): 178-179
Received: 12-06-2021
Accepted: 15-07-2021

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Airway management in a case of gross hydrocephalus posted for tooth extraction

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DOI: https://doi.org/10.33545/26643766.2021.v4.i3c.304

Abstract
Hydrocephalus is a condition due to excessive accumulation of cerebrospinal fluid results in increase circumference of the head which poses challenge to anaesthesiologist in view of difficult intubation. We present a 10 year old female child with huge hydrocephalus with global milestone delay associated with quadriplegic cerebral pasly. The problems anticipated was difficult intubation due to the presence of gross hydrocephalus, spastic quadriparesis and positioning of the child for intubation. Hence vigilant perioperative assessment and planning in positioning the child for intubation helps anaesthesiologist to overcome the challenges.

Keywords: Hydrocephalus, cerebral palsy, difficult airway, difficult intubation

Introduction
Children with gross hydrocephalus present challenges to anaesthesiologist due to increase in circumference of head, associated congenital anomalies. Here is a case report of child with gross hydrocephalus with cerebral palsy with global developmental delay posted for tooth extraction. The problems anticipated was difficult intubation due to the presence of gross hydrocephalus, spastic quadriparesis and positioning of the child for intubation.

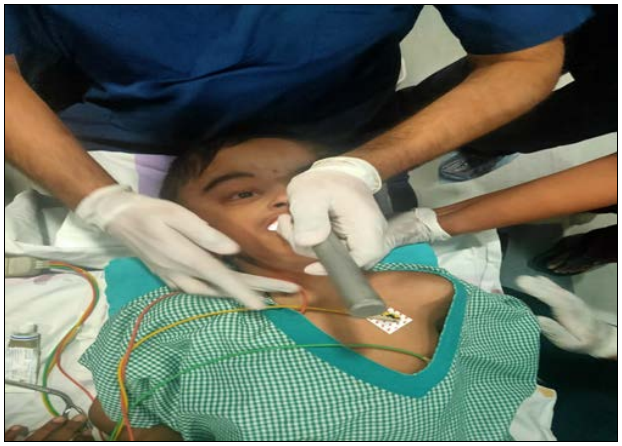
Case report
A 10 year old female child delivered at full term, NVD, weighing 19 kg at the time of admission came with complaints of swelling in the lower jaw associated with intermittent bleeding from the lower jaw for past two weeks.
She is a known case of hydrocephalus since six month of age treated conservatively with no history of shunt surgeries done before. She has a global developmental delay with quadriplegic cerebral palsy.
On examination - Child drowsy with no cry
Sunset sign present
Spastic quadriparesis
Vitals stable.

Anesthetic management

Difficult airway cart kept ready and standard ASA monitors were connected. Child was premeditated with injection atropine 0.4 mg and fentanyl 40 mcg intravenously.

Position – child was in supine position with the head placed on the thigh of intubating anaesthesiologist and towel placed below the shoulder too easy for intubating position.

Child was induced with deep plane of anaesthesia using sevoflurane and after checking effective bag and mask ventilation, nasal intubation was done with 4.5 size RAE cuffed ETT using Macintosh blade number. Then injection atracurium 10 mg was given. Anaesthesia was maintained with oxygen, air and sevoflurane and intermitted dose of injection atracurium was given. Hemodynamically child was stable and surgery lasted for 3 hrs. After initiation of spontaneous respiration child was reversed with neostigmine and glycopyrolate and was extubated carefully once the child had protective airway reflexes and fully conscious. Child shifted to postoperative intensive care unit for monitoring.



Discussion

Congenital Hydrocephalus is capable of producing brain atrophy hence poor prognosis and may also be associated with severe mental retardation. Usually, mental assessment together with other systems should be monitored cautiously because the birth asphyxia is associated with multi-organ damage. The anaesthetic management includes careful planning and can be challenging because of difficult airway. The goals of fluid management include maintaining adequate cerebral perfusion and normovolemia with isotonic fluids without hyperglycaemia. Small children will require extended monitoring in the postoperative period to identify problems early to enable early treatment.

Conclusion

The anaesthetic management in a gross hydrocephalic child can be particularly challenging due to complex issues like difficulties related to airway management, cardiovascular dysfunction, age-related needs of positioning and congenital anomalies. Proper positioning of children is mandatory for successful intubation.

Author's contribution

All authors were actively involved in the management of the case and in the process of publication.

Financial support

Nil

Conflicts of interest: There are no conflicts of interest.

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