Original Research Paper

Volume - 14 | Issue - 07 | July - 2024 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Anaesthesiology

ANAESTHETIC CONSIDERATIONS FOR HEAD AND NECK SURGERY IN ADULT PATIENT WITH HYDROCEPHALUS AND PREVIOUS CERVICAL STABILISATION – A CASE REPORT

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ABSTRACT Patient with hydrocephalus provides challenge for any head and neck surgery. And if the patient has even cervical stabilisation done along with it, they provide unique challenges to anaesthesiologists. Anaesthetists has to be vigilant about airway, neck extension, intra cranial pressures. We present a case of 19 years old male posted for SMR with FESS who was diagnosed with normal pressure hydrocephalus with VP shunt and also undergone cervical stabilization for atlanto-axial dislocation in 2017. This patient had also undergone unilateral nephrectomy at 5 years of age. After assessing completely patient was operated under general anaesthesia. Anaesthetic considerations in such a patient is discussed.

KEYWORDS : Hydrocephalus, Nephrectomy, Cervical Stabilisation, General Anaesthesia

INTRODUCTION:

Hydrocephalus is caused when there is excessive production of CSF within the ventricles of the brain. This can lead to increase in the intra cranial pressure.

Hydrocephalus is of: communicating, non-communicating, secretory hydrocephalus and normal pressure hydrocephalus.
Normal pressure hydrocephalus (NPH) is a type of communicating hydrocephalus characterized by increased ventricular size with normal opening pressures on lumbar puncture (1).

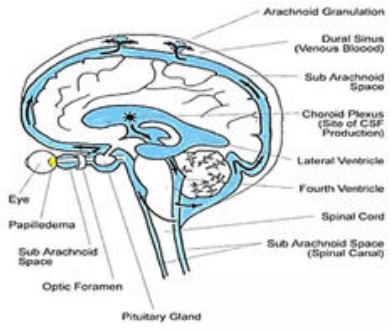

Fig 1. Circulation of CSF

Case report:

A 19 year old boy diagnosed for DNS with chronic sinusitis was planned for SMR with FESS. He had a seizure history in 2017 for which he had taken T. Valporate 200mg and was diagnosed to have hydrocephalus. T. Valporate was stopped after 2 years under physician advice. No other co morbidities like HTN, DM, CAD, BA, CVA, Thyroid disorders. No history of fever, sore throat and breathlessness.

Surgical history:

Patient had undergone right Nephroureterorectomy in view of right VURD in 2013 under GA, post op uneventful. History of tongue tie release and adenoidectomy in 2014 under GA, post op uneventful. History of Ventriculo-Peritoneal shunting in 2017 under GA, post op blood transfusion and ICU observation for 3 days. Patient had also had an atlantoaxial dislocation following accidental trauma for which he has undergone C1, C2, C3 fusion in 2017, ICU stay for 2 days. On general examination patient is conscious, oreinted, HR- 82/min, BP- 120/80mmHg, SpO2- 98% in Room air, systemic examination were within normal limits. Airway examination showed MPC- II, Neck movements: minimal flexion and extension, Teeth: no artificial denture/loose tooth, Spine: linear scar present over cerival spine region. All baseline investigations were normal.

Chest X-Ray: Prominent aortic knuckle, Tubular heart & VP shunt present X- Ray Neck: VP shunt, cervical screw seen (FIG 2) USG abdomen: Post right nephrectomy status. CT PNS: DNS to left with impinging to left Inferior turbinate hypertrophy.

Neurosurgeon opinion obtained. High risk, post op ICU and ventilator stay consent obtained. Patient assessed and taken for procedure under ASA 3.

Fig 2. X-Ray Neck

Meticulous planning and preparation of the operation theatre was done. Difficult airway cart, emergency drugs and other supportive measures were kept prepared. Taking into consideration of the diagnosis, we planned to provide General Anaesthesia for this patient, and Intubation with intubating LMA of size 3.

In operating room, mandatory monitors were connected. Patient was adequately preoxygenated and premedicated following which he was induced with Inj. Propofol 100mg and paralysed with Inj. Atracurium 30mg. Patient was then intubated with intubating LMA of size 3 without extending his neck. Bilateral air entry was checked and confirmed, tube fixed at 20 cm. Plane of anaesthesia was maintained with Oxygen, Nitrous oxide and Sevoflurane. Intra operative monitoring of Blood pressure, heart rate, saturation, blood loss, input and output was done. Blood pressure was maintained at MAP of 70-90 mmHg to maintain cerebral perfusion pressure. Post surgery, patient was extubated after achieving adequate tidal volume and respiratory efforts with Inj Myopyrolate. Post operative period was uneventful.

DISCUSSION

The patient should be prevented from going into hypotension and hypertension to maintain adequate cerebral perfusion as well as prevent increase in intra cranial tension (2). Hypotension is prevented by maintaining a MAP above 70mmHg. Hypertension is prevented for creating a bloodless field. Controlled hypotension and bradycardia have been standard for endoscopic sinus surgery to reduce bleeding and improve operative field. Drugs causing hypertension or increased ICP like Inj. Ketamine are avoided. Drug to cause hypotension and tachycardia like Inj Dexmedetomidine can be used. Normocapnia should be maintained in patients with normal ICP. Handling a case of hydrocephalus is challenging as that itself is a cause for difficult airway(3). In case of very large head, intubation becomes technically difficult. Proper positioning using a pad or bolster below the shoulder is preferred. Positioning of the head should be careful and lateral position can be preferred. This patient has also cervical stabilization leading to restriction of neck flexion and extension. Hence neck movement should be very careful and one must prevent from extending the neck during intubation. Jaw thrust maneuver is preferred for opening the airway. Intubating LMA should be used as it prevents extension of neck and further damage to cervical spine. Advantages of

ILMA are used for blind intubation used for difficult airway and helps neck immobilization(4). 11The patient also has undergone nephrectomy so in view of single kidney, drugs used for him should be calculated doses to prevent AKI. Preferably nephrotoxic drugs like NSAIDS, Ibuprofen are avoided.

CONCLUSION:

Anaesthetist should be prepared to handle such cases where attention is required and closed monitoring prevents any life threatening complications. Hydrocephalus and cervical stabilization produces difficult airway and extra anaesthesiologist may be required. Special care should be given in intra operative monitoring.

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