Original Research Paper

Volume - 11 | Issue - 07 | July - 2021 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Anaesthesiology

DIFFICULT INTUBATION AT BAY! C-MAC FAILS TO PAY!! CRITICAL POSITIONING PAVES THE WAY!!!, DIFFICULT INTUBATION IN A CASE OF OBSTRUCTIVE HYDROCEPHALUS POSTED FOR V.P. SHUNT

Dr. Ankita Yadav	Senior Resident, Department Of Anaesthesia, V.M.M.C & Safdarjung Hospital, New Delhi.
Dr. Gurjinder Singh	Senior Resident, Department Of Anaesthesia, V.M.M.C & Safdarjung Hospital, New Delhi.
Dr. Parasmani*	Senior Resident, Department Of Anaesthesia, V.M.M.C & Safdarjung Hospital, New Delhi.*Corresponding Author

ABSTRACT Children with gross hydrocephalus present various challenges to the anaesthesiologists. The problems encountered are not only limited to associated congenital abnormalities and physiological derangements due to raised intra cranial tension, even intubation in such cases can pose great difficulty owing to the increased head circumference that makes the alignment of oro-pharyngo-laryngeal axis under direct laryngoscopy almost impossible [1,3]. Difficult airway cart, C- MAC, paediatric fibreoptic bronchioscope and all possible difficult airway armamentarium must be checked to be in place before induction of anaesthesia in such cases to potentially avoid any airway disaster [2] . Here is a case report of a child with gross hydrocephalus posted for emergency VP shunt placement that turned out to be an extremely challenging airway.

KEYWORDS : difficult airway, hydrocephalus, ventriculo-peritoneal shunt.

INTRODUCTION:

Hydrocephalus is a condition in which there is excessive accumulation of cerebrospinal fluid in the cranium resulting from increased production or decreased drainage of CSF [1,3]. Hydrocephalus may be classified as communicating or non-communicating [2]. It is very frequently associated with congenital malformations. Ventriculo-peritoneal shunt is a frequently performed surgery to drain excess CSF from the cranial cavity there by reducing intra cranial tension [1,4]. Thorough preoperative evaluation of the child is of utmost importance.

CASE REPORT:

A 2 month old child presented to our hospital with progressively and disproportionately increasing head circumference since birth. On elicitation of history by mother, it was found that the child was second born to a non-consanguineous married couple with no similar complaints in the sibling or any of the family members. The child was apparently normal after an institutional normal vaginal delivery. The child cried immediately after birth. There was no h/o NICU admission and the child was immunized up to date. Further elicitation of history revealed a recent complaint of refusal of feeds and regurgitation of oral feeds. On examination child was vitally stable H.R. 116/min, B.P. 68/34 mm Hg, SpO2 99% at room air breathing spontaneously. Child was a little drowsy, setting sun sign in eyes present, occipito frontal circumference 58 cm, weight 4.5 kg, dilated scalp veins were present with bulging fontanelles and pupils were of normal size and were normally reactive. No apparent sensory motor deficit could be identified. N.C.C.T. Head revealed a CSF density area involving left fronto-parieto-occipital and right temporo-parieto- occipital lobe. Lateral and third ventricles were prominent while the fourth ventricle was found to be normal (findings suggestive of non-communicating hydrocephalus.) Neuro-sonogram revealed supra-tentorial CSF density area bilaterally. 2D echocardiography revealed normal cardiac anatomy with EF 60%, no regional wall motion/ valvular abnormality. All other routine blood investigations were within normal limits. This baby was posted for emergency V.P. Shunt surgery. High risk consent was obtained from the patient's attendant(mother.) Difficult airway could very well be anticipated in this case owing to the disproportionately increased head circumference. Airway crash cart, C-MAC video-laryngoscope, paediatric fibreoptic laryngoscope were in place.

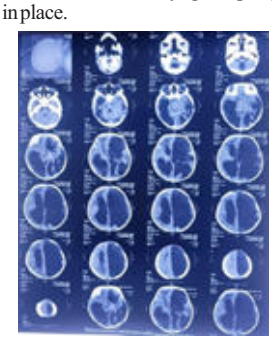

Image 1- NCCT of the patient showing gross hydrocephalus.

Image 2: Abnormally large head circumference of patient.

Image3: Final intubation position.

All the basic monitors were attached – E.C.G., SpO_2, NIBP. Inhalational induction was carried out using Sevoflurane in incremental dial settings maintaining spontaneous ventilation. Intravenous cannula was secured, fluids were started. A bolster (cotton roll) was placed beneath the shoulder to aid intubation positioning.

Immobilization to trapezius muscle skin pinch was used as the end point of inhalational induction. After checking for effective bag and mask ventilation Inj. Succinyl choline 2mg/ kg was administered. Direct laryngoscopy was done with miller blade number 1, Cormack Lehane grade 3 with floppy epiglottis was visualized despite optimum external laryngeal maneuver. First attempt of intubation failed. Bag and mask intubation was continued and plane of anaesthesia was deepened using Sevoflurane. Second attempt of intubation was done by a senior anaesthesiologist that failed in a similar fashion. We immediately concluded it to be a very difficult airway and planned a change in our airway management strategy. Intubation in lateral position was attempted using C-MAC video laryngoscope but that was also not fruitful. There was a little improvement in glottic view in lateral position but there was difficulty in endotracheal tube advancement and negotiation. We continued bag and mask ventilation in between ensuring adequate oxygenation. Fourth attempt of intubation was done placing rolled cotton under the neck, shoulders and body uplifted by bolsters an two doughnuts under the patients head effectively nullifying the large head size. Conventional direct laryngoscopy was done using miller blade no. 1 and airway was secured using 3.5 mm i.d. portex uncuffed endotracheal tube with little difficulty in negotiation. Anaesthesia was maintained with 50%) O_2, 50% Air, Sevoflurane(traces) and Inj. Atracurium loading 0.5 mg/kg and incremental dose 0.125 mg/ kg. Surgery was started. Intra-op the patient was stable. The surgery lasted 1 hrs and 15 minutes. Inj. Paracetamol 15 mg/ kg was administered for analgesia. At the conclusion of surgery, when patient acquired spontaneous ventilation, the neuromuscular blockade was reversed using Inj. Glycopyrollate 8mcg/kg and Inj. Neostigmine 50 mcg/kg. Patient was successfully extubated when patient had adequate motor power, was wide awake, was maintain spontaneous respiration with adequate rate and tidal volume and had intact protective airway reflexes. Child was crying upon extubation and was moving all four limbs. Patient was then shifted to post anaesthesia care unit for monitoring and observation.

DISCUSSION:

Hydrocephalus occurs due to accumulation of CSF in cranial cavity[1,4]. Anaesthetic Management of such patients is specially challenging when it is associated with heart defects or other congenital anomalies. Persistently raised intracranial tension can lead to brain atrophy and long term mental retardation. Hence, there is urgent need of measures to reduce intra cranial tension[3]. Persistently raised ICT can lead to various physiological derangements in form of bradycardia, hypertension, persistent projectile vomiting or regurgitation of feeds which might get aspirated leading to aspiration pneumonitis. Further such patients may present for shunt revision surgeries due to blockade, infection and shunt malfunction.

CONCLUSION:

Anaesthetic management of gross hydrocephalus can pose complex issues like congenital anomalies, altered physiology and difficult airway [1,3]. Thorough preoperative assessment of the patient is of prime importance. In our case critical positioning of patient's head played a major role in tackling an extremely difficult airway. The positioning not only improved the glottic view, it rather unwarranted the need of C-MAC video-laryngoscope and paediatric fibreoptic laryngoscope and also made the negotiation of the endotracheal tube convinient.

REFERENCES:

1) Vagyannavar R, bharti V, Hashin M, "Difficult airway in a case of gross hydrocephalus for shunt surgery." Anesth essays Res 2017;11:1109-11.
2) Wheeler M. Management strategies for difficult paediatric airway. Anesthesiol clin north America 1998;16:753.
3) Neinaber J. Anaesthesia for ventriculoperitonaeal shunts. South Afr J Anaesth Analg 2011;17:73-5.
4) Bissonette B, Sadeghi P. Anaesthesia for neurosurgical procedures. In: Gregory GA, editor. Paediatric Anesthesia. 4 th ed., Vol 393. Edinburgh: Churchill livingstone; 2002. P. 4411-3.