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CASE REPORT

Anaesthetic Management of Pediatric Patient Posted for Spina Bifida Surgery

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ABSTRACT

Introduction: Spina bifida is a major birth defect that is a result of failure of the neural tube to close in the developing fetus. It is associated with varying degrees of neurologic impairment. The anatomic level of the lesion generally correlates with the neurologic motor and sensory deficit and ranges from complete paralysis to minimal or no motor deficit.

Case Report: A 3 year old male child who was diagnosed with spina bifida was posted for spina bifiida surgery. The patient had swelling in the lower back region associated with right lower limb weakness since birth. Patient developed continuous dribbling of urine. An MRI Lumbar spine was done which showed defect in the S1, S2, and S3 vertebrea with posterior herniation of spinal cord, neural placode and nerve roots which is suggestive of closed spinal dysarphism, spina bifida with lipo-myelocoele.

After through pre anaesthetic check-up, patient was posted for surgery. Patient was intubated with 4.5mm portex uncuffed endo tracheal tube and patient was kept in prone position. Standard monitoring was ensured intra operatively. With a total blood loss of 150ml which is within the maximum allowable blood loss limit, and total of 600ml of IV fluids were given to prevent volume overload.

Neurosurgeon wanted an awake test which was a challenge for us as patient was on uncuffed tube so, electromyography was used and TIVA with propofol was maintained to check after the corrective surgery. After the surgery patient was shifted to pediatric intensive care unit with ET tube in situ. Patient was extubated the following day.

Conclusion: As the pediatric patient was posted for spina bifida surgery which is a major surgery which took around 6-7 hours. Blood loss, fluid status, pain post-

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operative hypoxia were of major concern. Amount of IV fluids to be given intra-operatively, maximum allowable blood loss were calculated prior to surgery. The anaesthetic management was successfully done here without any adverse events.

Key Messages: Folic acid supplementation during pregnancy can prevent this defect that can happen as a congenital deficit and complications. Mortality and morbidity can be prevented with folic acid supplementation, early diagnosis or screening and early intervention. Our patient was a3 year old with deficits operated with planning with a with a multi disciplinary team and with a successful outcome.

KEYWORDS

• Anaesthetic management • Electromyography • Pediatric anaesthesia • Spina bifida

INTRODUCTION

Spina bifida is a major birth defect that is a result of failure of the neural tube to close in the developing fetus. It is associated with varying degrees of neurologic impairment. The anatomic level of the lesion generally correlates with the neurologic motor and sensory deficit and ranges from complete paralysis to minimal or no motor deficit.

Folic acid fortification of food supply can lead to a decrease in spina bifida; Strong scientific evidence is there to prove this, Still, many countries around the world have yet to approve mandatory fortification through government legislation.[1]

CASE REPORT

A 3 year old male child who was diagnosed with spina bifida was posted for spina bifida surgery. The patient had swelling in the lower back region associated with right lower limb weakness since birth, and patient's mother had skipped iron and folic acid supplements in the pre natal period.

Patient also developed continuous dribbling of urine. An MRI Lumbar spine with whole spine screening was done which showed defect in the S1, S2, and S3 vertebrea with posterior herniation of spinal cord, neural placode and nerve roots which is suggestive of closed spinal dysarphism, spina bifida with lipomyelocoele.

After through pre anaesthetic check-up and getting clearance from pediatrician, patient was posted for surgery. Patient was premedicated with Inj Glycopyrollate, Inj Midazolam, induced with Inj Propofol and intubated with 4.5mm portex uncuffed endo tracheal tube with the help of Inj. Suxamethonium. Anaesthesia maintained with O2, N2O, Isoflurane.

Patient was kept in prone position. Standard monitoring with ECG, SPo2, NIBP, ETco2,Temperature, Urine Output was ensured intra operatively. With a total blood loss of 150ml which is within the maximum allowable blood loss limit for the patient and total of 600ml of IV fluids were given to prevent volume overload.

Neurosurgeon wanted an awake test which was a challenge for us as patient was on uncuffed tube so, electro-myography was used and TIVA with propofol was maintained to check after the corrective surgery. After the surgery patient was shifted to pediatric intensive care unit with ET tube in situ. Patient was extubated the following day uneventfully.

DISCUSSION

One of the most common major birth defect among live-born infants is Spina bifida (myelomeningocele) and half of those cases are preventable if folate is given periconceptionally. Spina bifida which is improper closure of neural tube and has multifactorial aetiology like environmental and maternal. This condition can also cause many difficulties like paraplegia, skeletal muscle weakness, bladder dysfunctions.[2]

This condition can drastically affect the structures of the spinal cord that can result in deficiencies. There could be an overall decrease in mobility and functional participation amongst this population. Rehabilitating with Physiotherapy plays an essential role in people with myelomeningocele (MMC).

Resources such as photobiomodulation (PBM) may support the rehabilitation of neurological conditions.[3]

The finding of an elevated concentration of alpha-fetoprotein (AFP) in amniotic fluid samples from pregnancies is a marker in prenatal diagnosis for anencephaly or MMC. Assay of acetylcholinesterase in amniotic fluid was also shown to be diagnostic. The indication for biochemical screening is maternal obesity where it impairs detailed ultrasound examination of the foetal anatomy. Management of MMC traditionally involves surgery within 48 h of birth ,with closure of the defect to minimize the risk of ascending infection that can result in meningitis.[4]

In a metanalysis, significant decline in spina bifida associated infant/neonatal mortality and case fatality were consistently observed with advances in treatment and mandatory folic acid food fortification.[5]

The challenges we faced were access of IV cannula, which was done under Sevoflurane; Positioning of the patient in Prone position. The ET tube was uncuffed and to be properly fixed and ETco2 monitoring was done. Hypothermia was avoided with the use of Warmer; Fluid and Blood was used to maintain stable haemodynamics.

CONCLUSION

As the pediatric patient was posted for spina bifida surgery which is a major surgery which took around 6-7 hours. Blood loss, fluid status, pain post-operative hypoxia were of major concern. Amount of IV fluids to be given intra operatively, maximum allowable blood loss were calculated prior to surgery. The anaesthetic management was successfully done here without any adverse events.

Conflict of Interest: Nil

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