



ANAESTHETIC MANAGEMENT IN A PATIENT WITH NORMAL PRESSURE HYDROCEPHALUS UNDERGOING APPENDECTOMY

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ABSTRACT Hydrocephalus is excessive accumulation of CSF inside the cerebral ventricles. It can be due to obstruction in normal flow of CSF or due to excessive production of CSF. Hydrocephalus in adults there are four different types; obstructive, communicating, hypersecretory and normal pressure hydrocephalus. Obstructive hydrocephalus develops from a block in CSF pathways. Communicating hydrocephalus is caused by impaired absorption of CSF. Hypersecretory hydrocephalus is caused by an overproduction of CSF. Normal pressure hydrocephalus is a type of communicating hydrocephalus with increased incidence in older age with a not fully understood pathogenesis.

KEYWORDS : Anaesthesia, Hydrocephalus, Appendectomy

INTRODUCTION

Normal pressure hydrocephalus is one of the few causes of dementia which is reversible in elderly patient. Here the 87 year old patient presented with delirium, abdominal pain and urinary incontinence. Patient was posted for emergency appendectomy. In normal patient who is undergoing open appendectomy preferred anaesthesia was spinal anaesthesia. Considering the age of the patient epidural anaesthesia was preferred than other modes of anaesthesia as anaesthesia can be prolonged for the surgery and post operative analgesia as well as early mobilization, there is less chance of hemodynamic instability, post operative cognitive dysfunction, raised intracranial pressure and hyperkalaemia.

Case report:

An 87 years old man was brought to OPD with history of memory loss both recent and past for 6 months, history of 3 episodes of syncope and history of abdominal pain over lower quadrant for past 1 day. Patient had no history of other comorbidities. On examination patient was conscious. Patient was oriented to person but disoriented to time and place. Patient was afebrile, on spontaneous respiration with spo2 100%. Vitals were stable. On evaluation, patients total count was elevated about 14220 cells/cumm and had raised neutrophils 87.4%, his serum sodium was mildly decreased about 133 meq/l, rest of the blood investigation were normal. MRI showed age related atrophic changes with possible Alzheimer's and mild normal pressure hydrocephalus component. CECT abdomen showed appendix thickened and inflamed measuring -9.6mm with peri appendiceal fat stranding. Patient was admitted and was maintained on npo. Foley catheterization was done. Neurologist opinion was obtained and given high risk for surgery and General surgeon opinion was obtained and was advised for open appendectomy. Patient was assessed and taken up for surgery under ASA 3 E. Standard monitors including pulse oximetry, electrocardiogram, BP cuff, EtCo2 were applied. Supplemental oxygen was administered using Hudson mask throughout the procedure. Under aseptic precautions parts painted and draped, L1 and T12 space was identified. Using Tuohy needle 18G size epidural space was reached, space was confirmed with lor technique and non-ionic dye spread. Catheter was threaded till 10cm. Epidural top-up with 6ml of 0.25 percent bupivacaine was given every one hour till the procedure ended. Intraop hemodynamics were stable. After the procedure, patient was shifted back to post op ward in hemodynamically stable condition.

DISCUSSION:

The goal of anaesthetic management in this patient includes to decrease post operative cognitive dysfunction, to prevent further deterioration of dementia, achieving adequate level of sensory blockade, adequate postoperative pain relief and early mobilization. General anaesthesia itself presents with few risks for the patient, since the patient was edentulous and restriction of flexion neck movement

airways itself presented with few challenges for intubation. Studies have shown that on induction it may cause significant changes in ICP or cerebral perfusion pressure. Laryngoscopy and rapid sequence induction may also cause an increase in ICP. Patient had mild hyperkalaemia and using muscle relaxant such as succinylcholine will further worsens hyperkalaemia which may leads to dysrhythmias and cardiac arrest. In elderly patient usage of multiple drugs has prolonged effects and action due to decrease in metabolism and excretion as compared to younger patients. Hypothermia is also another factor which went against in using general anaesthesia. During general anaesthesia, the neurological evaluation is limited to the pupillary assessments that may only highlights major cerebral worsening, thus an awake, cooperative patients help in understanding the neurological status intraoperatively and favours neuraxial anaesthesia.

Spinal anaesthesia also presents with risks in patient with normal pressure hydrocele. There is always a chance of brain herniation on introduction of wide bore needle as result of change in pressure. Spinal hypotension cause decrease in cerebral perfusion which in turn causes decrease ICP. The volume of CSF in patient with hydrocephalus is increased and adding more volume of anaesthetic drugs prolongs the action as well as increase the ICP. Chances of post puncture headache is more and makes it difficult is assessing the neurological status in patient with dementia.

Epidural anaesthesia only was preferred than other means of anaesthesia as it causes less hemodynamic instability, no post puncture headache, can prolong the anaesthesia intraoperatively if needed, helps in quick and uneventful post operative recovery. As no option is risk free epidural has its own challenges such as entering into false space but in order to prevent it, we used non-ionic dye to confirm the space.

CONCLUSION:

We concluded that epidural anaesthesia was safer mode of anaesthesia in an elderly patient with normal pressure hydrocephalus undergoing open appendectomy as it causes lesser post operative complication and good post operative analgesia as well as early mobilization.

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