CORRESPONDENCE

Isobaric local anesthetic drug is better alternative than hyperbaric for successful spinal anesthesia in parturients with kyphoscoliosis

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Although spinal anesthesia (SA) in a parturient with kyphoscoliosis is not only a challenge to give but also may fail most of the times or produce patchy effect. We report the successful use of isobaric ropivacaine in SA after unilateral patchy effect of intrathecal hyperbaric bupivacaine in kyposcoliotic pregnant patient for surgery.

A 24 year old female, primigravida with 36 week gestation in labor was admitted for cesarean section due to cephalopelvic disproportion. She had severe kypohoscoliosis of lower thoracolumbar spine due to poliomyelitis of lower limbs. On physical examination, interspinous lumbar spaces were not felt appreciably. X-ray spine showed severe kyphoscoliosis of lower thoracolumbar spine with convexity toward left. After obtaining normal routine investigations, surgery was planned under SA. Under all aseptic condition in sitting position, 12 mg of 0.5% hyperbaric bupivacaine was given after free flow of CSF in L3-L4 subarachnoid space with 25 G spinal needle by paramedian approach. Immediately patient placed in supine position and anesthetic level checked with pinprick method. On right side, level achieved up to T6 in comparison to T12 on left side after 5 minutes. Immediately 15-20 degree left side table tilt given to achieve effect on left side. But in view of incomplete anesthetic level on left side even after 20 min, repeat SA with 8 mg of isobaric ropivacaine 0.5% was given at L3-L4 level in sitting position. Within 5 minutes of repeat spinal, adequate sensory block up to T4 achieved on both sides in supine position and surgery started. Patient remained hemodynamically stable throughout surgery. During postoperative period, patient was observed for any postoperative and spinal related complication which was found uneventful.

Anesthetic management in pregnant patient with kyphoscoliosis is always challenging because of anatomical and physiological respiratory changes produced by abnormal spine curve. Increase in cardiac output during normal pregnancy is poorly tolerated by these patients because of increased peripheral vascular resistance. These cardiopulmonary changes which were absent in our patients, place the patients at increased risk of morbidity and requirement of postoperative ventilation.[1,2]

Although use of both general and regional anesthesia have been described in these patients but SA was preferred here to avoid airway manipulation in setting of difficult airway and full stomach associated with pregnancy. To overcome technical difficulty with regional anesthesia, different approaches have been described like paramedian approach by Haung.[3] In our case we also used paramedian approach and luckily we got spinal puncture in 2nd attempt both times. Main disadvantage of regional anesthesia in these patients are incomplete or failed block which has also occurred in our patient.[4] The cause of incomplete block could be the spine deformity itself or incorrect placement of local anesthetic, and drug defects. But in our case likely cause was due to the early settlement of hyperbaric drug on right side due to abnormal spine curve. So to achieve complete block and to counter the postural gravity effect on hyperbaric drug, we used isobaric ropivacaine during repeat SA. To prevent high spinal complications, low dose was used in repeat spinal. Incomplete block with use of hyperbaric local anesthetic drug in kyphoscoliotic patient has been previously reported but still clinical reporting regarding successful use of isobaric drug in these patients is needed.[5]

In conclusion, isobaric local anesthetic drug should be preferred over hyperbaric drug for successful spinal anesthesia in patient with severe kyphoscoliosis.

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A normal capnograph trace does not rule out circuit disconnection

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Loss of a capnograph trace is usually taken as one of the indicators of disconnection in the anesthetic circuit and vice versa.[1] The following report shows that presence of a normal capnograph trace does not rule out circuit disconnection.

A 65-year old woman was scheduled for ankle surgery. Apart from controlled hypertension, she was otherwise healthy. Anesthesia was induced in the anesthetic room with a combination of midazolam, fentanyl and propofol. A size 3 laryngeal mask airway was inserted and anesthesia maintained with 40% oxygen, nitrous oxide and 1% isoflurane under spontaneous ventilation. Femoral and sciatic blocks were given using a nerve stimulator and 20 ml of bupivacaine 0.25% into each site. Patient was then transferred to the operating room. Routine monitors and the circle anesthetic circuit were reconnected and the settings of the gas flows and isoflurane vaporizer checked. Patient had a heart rate of 60 beats/min, blood pressure 100/48 mmHg, oxygen saturation of 97% and end expiratory carbon dioxide concentration of 5.8% with a normal capnograph trace. About five minutes later, it was noticed that the end tidal isoflurane concentration was reading 0.2% although the inspired concentration was set at 1%. The N_2O concentration was reading 20%. The total gas flow was about 6 L at this stage. The vaporizer was not empty. The measured tidal volume was reading around 0.3 L and had not changed. The reservoir bag was not filling adequately but was not collapsed. The capnograph trace was unchanged. There was no change in the patient's vital signs. It was then noticed that there was a disconnection at the common gas outlet. The circuit was reconnected and the gas concentrations improved. Further anesthetic course was uneventful. The incident was discussed with the patient postoperatively. There was no evidence of any intraoperative awareness.

The previous patient had received a spinal anesthetic with supplementary oxygen. The common gas outlet had been disconnected to connect the facemask oxygen tubing. However, when that operation finished, it was not reconnected. The side-stream port for sampling tube for spirometry and gas analysis was situated between the filter and the Y-piece of breathing circuit. Since the patient was breathing spontaneously, the capnograph was showing a normal waveform despite the disconnection at the common gas outlet. This also ensured that the measured expired tidal volume was unchanged. The recirculation of gases within the circle system contributed to a slower rate of fall in the concentration of isoflurane and N_2O. The presence of the regional nerve blocks ensured analgesia and little change in vital signs.

This report shows that a normal capnograph trace does not rule out circuit disconnection during spontaneous ventilation. It also reinforces the need to briefly re-check the anesthesia machine after every case.

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Is monitored anesthesia care (MAC) for lower limb orthopaedic surgery in cervical cord injured patients adequate?

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Spinal cord injuries (SCI), involving previously healthy young adults, result from trauma; 37% occur after road accidents, 42% follow falls, 11% are associated with sports and recreational activities, and 3% after assault.[1] Respiratory complications are the leading cause of death in the short or long term.[1,2] SCI can cause numerous pulmonary complications and special attention to respiratory support can reduce morbidity, length of stay, and mortality.[2,3] Anesthesiologists have to encounter the consequences of SCI preoperatively to postoperative period. Management of anesthesia in cervical spinal cord injured patients varies from regional anesthesia, general anesthesia to monitored anesthesia care.

A 25 year old young male patient scheduled for intramedullary nailing for right mid shaft fracture femur after detailed pre anesthetic check-up. Patient had diffuse cord edema from C3-C5 with paraplegia and bowel, bladder involvement after spinal cord trauma 6 weeks back. He was on conservative treatment for cord edema and pain. His sensory level was T11 and crutch field cervical traction was in situ. Patient was hemodynamically stable but had abdomino-thoracic respiration with poor cough reflex although breath holding time was 27 sec. Preoperative investigations were within normal limits. Premedication done with tab. ranitidine 150 mg and alprazolam 0.25 mg at night. The surgery was scheduled under monitored anesthesia care. Injection fentanyl bolus 1 μg/kg IV, Inj. glycopyrrolate 4-8 μg/kg IV was administered and propofol infusion @100-150 μg/kg/min IV was started for first 3-5 min. Propofol infusion @ 25-75 μg/kg/min maintained BIS above 75 and stable hemodynamics throughout the procedure. The procedure lasted for 2 hrs.

The patients with cervical cord injury present with multitude of systemic problems out of which autonomic dysreflexia is of prime concern. Our patient had to undergo surgery on insensate part below the level of injury. Studies have shown that even such surgeries may require anesthesia.[3] Fentanyl and propofol were successfully used to prevent the stimuli, and glycopyrrolate was used to prevent reflex bradycardia. Regional anesthesia is technically difficult in such type of patients due to cervical cord immobilization and crutch-field cervical traction in situ. General anesthesia related morbidities[4] can be prevented by managing such patients under MAC sedation.

The options in this situation are to give sedation, local anesthesia or no anesthesia. In compliant patients with infrequent mild spasm and no autonomic dysreflexia, 'no anesthesia' or only sedation may be an option. Infiltration anesthesia or peripheral nerve blocks may be helpful where some sensation persists. Pain can be alleviated by short acting opiates or the use of N_2O inhalation without having to resort to general anesthesia. The presence of an anesthesiologist is mandatory and monitoring should be instituted and venous access secured in case there is an unexpected need for anesthetic intervention. There is no evidence that spinal anesthesia adversely affects or alters neurological deficit in spinal cord injured patients. It can reliably prevent autonomic dysreflexia and spasm. Epidural anesthesia may be used, but is not as reliable as spinal anesthesia in preventing autonomic dysreflexia.[5] Supportive treatment with appropriate sedation, is key to the management. Suxamethonium is best avoided from 72 h to 9 months following injury. For short procedures on surface lesions or limbs, spontaneous ventilation is satisfactory, although it should be noted that patients with intercostal paresis will appear to have an obstructed breathing pattern.

Success of MAC depends upon communication with the patient and surgeon. Always be prepared for emergency management of airway.

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