

Anesthetic Management in an Established Case of Anterior Spinal Artery Syndrome Posted for Inguinal Hernioplasty

B V Mahesh Babu¹, S Sai Baba², A S Kameswara Rao³

¹Associate Professor, Department of Anaesthesiology, Rangaraya Medical College, Kakinada, Andhra Pradesh, India, ²Formerly Senior Post Graduate, Department of Anaesthesiology, Rangaraya Medical College, Kakinada, Andhra Pradesh, India, and Presently Assistant Professor, Department of Anaesthesiology, Mamata Medical College, Khammam, Telangana, India, ³Formerly Professor and Head, Department of Anaesthesiology, Rangaraya Medical College, Kakinada, Andhra Pradesh, India and Presently, Dean, KIMS, Amalapuram, Andhra Pradesh, India

Anterior spinal artery syndrome (ASAS) is a rare and permanent damage, caused as a neurological complication of spinal anesthesia. In this case study, we have given account of our experience of anesthetic management of a documented case of ASAS, posted for inguinal hernioplasty. We did a thorough pre-anesthetic evaluation and found that patient had paraplegia and confined to bed with aspiration pneumonitis. He is a known hypertensive and on control with tablet amlodipine 5 mg/day. He was subjected to antibiotic therapy, mucolytics with respiratory physiotherapy and incentive spirometry. After preparing the patient thoroughly, patient was subjected to general anesthesia. Post-operative analgesia was provided with injection fentanyl, given with a syringe pump. Post-operative period was uneventful.

Keywords: Anterior spinal artery syndrome, General anesthesia, Hernioplasty, Spinal anesthesia

INTRODUCTION

Neurological complications have long been recognized as a potential complication of regional anesthesia, both spinal anesthesia and epidural anesthesia. Fortunately, these complications are very rare. The attributed risk factors for neurologic deficit after spinal anesthesia include spinal cord ischemia (ASCIS)¹ (related to the use of vasoconstrictors or prolonged hypotension), injury to the spinal cord or nerve roots during needle or catheter placement. Hemorrhagic or infectious complications of regional anesthesia may also lead to these complications.

This patient was subjected to spinal anesthesia 5 years back, for bilateral hydrocele – eversion and suturing surgery, and he had a disabling and permanent neurological complication – anterior spinal artery syndrome (ASAS).

ASAS is a rare neurological complication, where the blood supply to the anterior portion of the spinal cord is interrupted and it is supposed to be the most common form of spinal cord infarction.² The clinical features include loss of motor function below the level of injury, loss of sensations carried by the anterior columns of the spinal cord (pain and temperature), and preservation of fine touch and proprioception (carried by posterior column). Patients cannot feel pain and temperature, which sensations are carried through the anterolateral pathways. However,

proprioceptive sense and sensation of fine touch are preserved. It is also known as “Beck’s syndrome”³ (Figure 1).

CASE REPORT

Pre-operative Preparation

As the patient was chronically bedridden, he was found to have aspiration pneumonia, confirmed by X-ray chest. He was subjected to a course of intravenous antibiotics with incentive spirometry and chest physiotherapy. After thorough preparation, he was taken up for surgery, and general anesthesia was planned, as he was suffering from the hyperalgesia and was reluctant to take nerve blocks, and moreover hernioplasty was planned.

Anesthetic Procedure

Pre-medication:

1. Tablet lorazepam 1 mg at 9 p.m along with
2. Tablet rabeprazole 20 mg orally given on the previous night.

On the morning of surgery, anti-hypertensive agent, tablet amlodipine 5 mg was given with sips of water.

Nebulisation was given with salbutamol and budesonide before shifting to theatre. Injection midazolam 1 mg intramuscularly was given to relieve apprehension, while shifting from the ward.

Corresponding Author:

Dr. B V Mahesh Babu, 64-3-3, Prathapnagar, Kakinada, Andhra Pradesh, India. Phone: +91-9848160327. E-mail: bvmaheshbabu@gmail.com

Monitoring

1. Non-invasive blood pressure (NIBP) monitoring
2. Pulse oximetry
3. Electrocardiogram (ECG)
4. Urine output monitoring.

Before inducing, (1) injection glycopyrrolate - 0.2 mg intravenously (2) injection fentanyl - 1 micro grams/kg intravenously (3) injection ondansetron - 4 mg intravenously were given.

After pre oxygenating for 5 min, patient was given injection lignocaine (preservative free) 60 mg intravenously, followed by induction with injection etomidate - 0.3 mg intravenously and after having verified trial ventilation, patient was given injection rocuronium 1 mg/kg intravenously; intubated with No. 9 cuffed oral polyvinyl chloride endotracheal tube and fixed at 22 cm, after verifying bilateral air entry. Maintained with nitrous oxide and oxygen with 66%: 33% and isoflurane 1% was also added. Neuromuscular blockade was maintained with increments of injection vecuronium. Increments of fentanyl were also given. At the end of surgery, neuromuscular blockade was antagonized with injection neostigmine 2.5 mg with glycopyrrolate 0.5 mg. Patient was given 60 mg (3 ml) of injection lignocaine (preservative free) before giving neostigmine with glycopyrrolate. Patient was observed for 6 h in the post-operative period, while continuously monitoring ECG, SpO₂ and NIBP was monitored every 1 h. Injection fentanyl infusion was started at the dose of 1 µg/kg/h for 12 h with syringe pump. Injection ondansetron 4 mg intravenously was given as rescue antiemetic for post-operative nausea and vomiting. Post-operative period was uneventful. Patient was discharged after 7 days (Figure 2 and 3).

DISCUSSION

Regional anesthesia has many advantages. It is easy to administer and will not require sophisticated equipment. It reduces post-operative mortality and prevents complications like deep vein thrombosis, pulmonary embolism, stroke, myocardial infarction, wound infection.⁴ But the risks, the most serious of which are neurological injuries should be kept in mind. Scott and Hibbard reviewed 500,000 obstetric patients, who received spinal and epidural anesthesia. Of these one case developed paraplegia due to ASAS.⁵

ASCIS is rare, accounting for 5-8% of all acute myelopathies and 1-2% of all vascular, neurological pathologies.⁶ ASCIS was a subgroup, or included highly selected patients such as those with an ASAS.^{7,8} The clinical features of ASAS

were classified according to the International Standards for Neurological and Functional Classification of Spinal Cord Injury proposed by the American Spinal Injury Association and the International Medical Society of Paraplegia.⁹



Figure 1: Para plegic limbs



Figure 2: Intubated patient

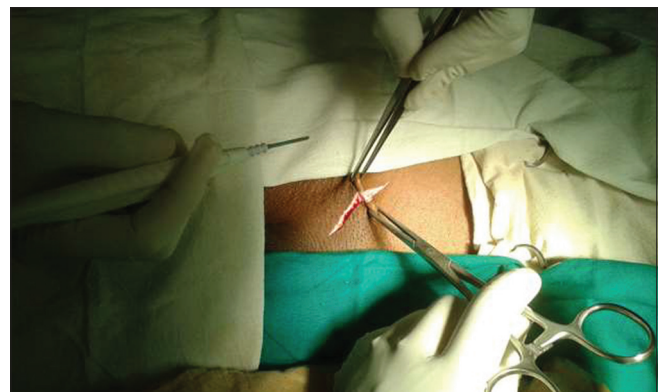


Figure 3: Surgical procedure

Clinical features include quadriparesis (depending on the level of the injury) and impaired pain and temperature sensation. Complete motor paralysis below the level of the lesion due to interruption of the corticospinal tract, and loss of pain and temperature sensation at and below the level of the lesion. Proprioception and vibratory sensation are preserved, as it is in the dorsal side of the spinal cord. This is a permanent disability.

In this case report, we discussed the anesthetic management of a documented case of ASAS with paraplegia with associated respiratory complications, as the patient was bed-ridden for a long time. As he is hypertensive with diastolic dysfunction, as revealed by echocardiography, we have induced with Injection etomidate and avoided injection succinylcholine, as it is a case of Paraplegia. Patient was continuously monitored and post-operative recovery was uneventful. With Fentanyl infusion, post-operative analgesia was well maintained. Patient was subjected to post-operative chest physiotherapy and was discharged after 7 days.

This is a rare case, which occurred as a sequel of regional anesthesia and signifies the importance of continuous peri-operative hemo-dynamic monitoring.

CONCLUSION

Awareness of this complication makes to think of the possible causes and to take measures to prevent them. This case report brings us the rare dreaded complication of spinal anesthesia and the anesthetic management of such case.

REFERENCES

1. Auroy Y, Narchi P, Messiah A, Litt L, Rouvier B, Samii K. *et al.* Serious complications related to regional anesthesia results of a prospective survey in France. *Anesthesiol* 1997;87:479-86.
2. Dahlgren N, Törnebrandt K. Neurological complications after anaesthesia a follow-up of 18,000 spinal and epidural anaesthetics performed over three years. *Acta Anaesthesiol Scand* 1995;39:872-80.
3. Beck K, Das syndrom des verschlusses der vorderenspinalarterie. *Dtsch Z Nervenheilkd* 1951-1952;167:164-86.
4. Rodgers A, Walker N, Schug S, McKee A, Kehlet H, van Zundert A, *et al.* Reduction of postoperative mortality and morbidity with epidural or spinal anaesthesia: Results from overview of randomised trials. *BMJ* 2000;321:1493.
5. Scott DB, Hibbard BM. Serious non-fatal complications associated with extradural block in obstetric practice. *Br J Anaesth* 1990;64:537-41.
6. Sandson TA, Friedman JH. Spinal cord infarction. Report of 8 cases and review of the literature. *Medicine (Baltimore)* 1989;68:282-92.
7. de Seze J, Stojkovic T, Breteau G, Lucas C, Michon-Pasturel U, Gauvrit JY, *et al.* Acute myelopathies Clinical, laboratory and outcome profiles in 79 cases. *Brain* 2001;124:1509-21.
8. Salvador de la Barrera S, Barca-Buyo A, Montoto-Marqués A, Ferreiro-Velasco ME, Cidoncha-Dans M, Rodriguez-Sotillo A. *et al.* Spinal cord infarction: prognosis and recovery in a series of 36 patients. *Spinal Cord* 2001;39:520-5.
9. Maynard FM Jr, Bracken MB, Creasey G, Ditunno JF Jr, Donovan WH, Ducker TB, *et al.* International Standards for Neurological and Functional Classification of Spinal Cord Injury. American Spinal Injury Association. *Spinal Cord* 1997;35:266-74.

How to cite this article: Babu BV, Baba SS, Rao AS. Anaesthetic management in an established case of anterior spinal artery syndrome posted for inguinal hernioplasty. *IJSS Case Reports & Reviews* 2014;1(7):6-8.

Source of Support: Nil, **Conflict of Interest:** None declared.