

Case Report

Anesthetic Technique in a Patient with Multiple Sclerosis Scheduled For Nephrectomy for a Renal Tumor: A Case Report

Veena Asthana^{*1}, Rajat K Agarwal², Upsana Baruha³, Ashish Jain⁴

^{1,2}Department of Anaesthesiology, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Jollygrant, Dehradun, India

^{3,4}Department of Surgery, SRH University, Himalayan Institute of Medical Sciences, Swami Ram Nagar, Jollygrant, Dehradun, India

Article History

Received: 04.12.2019

Accepted: 11.12.2019

Published: 05.01.2020

Journal homepage:

<https://www.easpublisher.com/easjacc>

Quick Response Code



Abstract: Multiple sclerosis is one of the most common autoimmune demyelinating disorders. The commonest presentation includes multiple sensory deficits, cranial nerve palsies, limb weakness, paraesthesias, cardiac dysrhythmias, autonomic dysfunction, ventilatory disturbances leading to hypoxaemia and respiratory failure. Thus posing challenges to the anaesthesiologist. Appropriate preoperative evaluation, administration of a good premedication, careful selection of the anesthetic agents and effective postoperative pain control can prevent problems after prolonged major surgery in patients with MS. We report successful anesthetic management in a patient who was a known case of MS for past ten years and presented with renal cell carcinoma to undergo nephrectomy under general anesthesia.

Keywords: cranial nerve palsies, limb weakness, paraesthesias.

Copyright © 2020 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Multiple sclerosis (MS) is characterized by inflammation and demyelination in brain and spinal cord and is more common in women than men (Dierdorf, S. F., & Walton, J. S. 2006). The age of onset is typically between 20 and 40 years. Manifestations of MS vary from a mild illness to a rapidly evolving and incapacitating disease requiring detailed preanaesthetic checkup. As preoperative anxiety, stress, surgical trauma, electrolyte imbalance, metabolic derangements, infection, fever postoperative pain, respiratory insufficiency can exacerbate (Martz DG, Jr. *et al.*, 1998) MS the anaesthetic management of these patients poses challenges to the anaesthesiologist.

CASE REPORT

A 37 years old female patient (weight 62 kg) who was a known case of MS for ten years presented with renal tumor to undergo nephrectomy. The patient's history revealed that she initially had diminution of vision in both eyes and limb weakness, with movement induced muscle spasms, in all the four limbs. Her symptoms were usually diplopia, difficulty in vision and ataxic gait. She also had opticneuritis. Bowel and bladder function was normal. There was no history of seizures, difficulty in speech, swallowing and breathing.

Her treatment was stopped five years back. Presently, she was completely asymptomatic. Her respiratory system and blood gas analysis was normal. Autonomic system was tested with heart rate response to deep breathing and was found to be normal. The patient stopped taking her medication a month before operation herself.

Laboratory investigations (routine hematological, liver and kidney function, serum electrolytes), chest Xray and electrocardiogram were normal. Magnetic resonance imaging scan showed patchy bright signals within the cord on T 2 weighted images from C 1 to T 10 vertebral levels suggesting demyelination.

Anaesthetic Management

The patient was classified as ASA grade III physicalstatus, and parental informed consent was obtained.

Following preoperative counselling and night premedication with oral alprazolam 0.25 mg, next morning patient was shifted to operation theatre (OT). After I.V. access midazolam 1 mg, inj. Hydrocortisone 100 mg were administered. Induction was done with 2.0 mg/kg of propofol and 2.0 µg/kg of fentanyl and 25 mg

of inj atracurium following preoxygenation and the airway was secured using 7.5 cuffed endotracheal tube. Maintenance of anaesthesia was done using fentanyl along with continuous Dexmedetomidine infusion, air in O₂ (40:50) and sevoflurane with controlled ventilation Atracurium requirement was decreased with the above combination. I.V. Ringer lactate about 1400 ml was infused. At the conclusion of surgery neuromuscular block was reversed with neostigmine 0.05 mg/kg and glycopyrrolate 0.01 mg satisfactorily. I.V. inj. ondansetron 4 mg was administered.

Post-operatively SpO₂, NIBP, ECG and temperature monitoring along Monitoring included oxygen saturation (SpO₂), ECG, non invasive bloodpressure (NIBP) and end tidal carbon dioxide (EtCO₂), temperature from the OT temperature was maintained at 22° C with O₂ supplementation byventimask was done in the recovery room. I.V. Tramadol 2 mg/kg, six hourly was used for post-operative analgesia. A close monitoring of temperature was done in postoperative period she was shifted after 36 hrs from PACU to ward. There was no neurological exacerbation of the disease.

DISCUSSION

Review of literature offers contradictory results regarding anaesthetic management in M.S GA and epidural with low concentrations of LA are considered safe. (Perlas, A., & Chan, V. W. 2005). Spinal anaesthesia has been implicated in postoperative exacerbation. The demyelinated neurons appear susceptible to the neurotoxicity of LA and aggravate the conduction blockade (Stoelting, R.K., & Dierdorf, S. 2002). As regards conduct of G.A no particular induction agent is preferred. Succinylcholine contraindicated as it can produce hyperkalemia . The latter can also cause resistance to non-depolarizing blocking agents (NDBA). Literature shows that the sensitivity to NDBAs can also be present because of muscle wasting and use of medications such, dantrolene and baclofen .N-M.J sensitivity to muscle relaxants is present thus necessitating neuromuscular monitoring with titration of the NDBA in the intraoperative period (Stoelting, R.K., & Dierdorf, S. 2002). Sevoflurane has been used successfully by many authors (Kulkarni, L. M. et al., 2011). Temperature rise of even a 0.5°C can result in slowing the conduction along the demyelinated segment resulting in relapse, hence maintenance of environmental temperature and its monitoring is essential .

Perioperative steroid administration to avoid adrenal suppression has been recommended in patients with history of recent steroid intake (Dorotta, I. R., & Schubert, A. 2002), so we used I.V. hydrocortisone 100 mg just before induction.

Maintenance of O.T temperature to 22°C helped in maintaining normal core temperature. Pulmonary function tests and blood-gases analysis is advocated in the case of significant respiratory embarrassment due to diminution of respiratory muscle strength even without symptoms.

The postoperative respiratory distress was avoided in our case with oxygen therapy by ventimask. Post operative pain was managed using PCA pump with tramadol infusion.

The perioperative period was thus uneventful in our case. To summarize, our report highlights that the optimal anaesthetic management of MS requires careful and thorough Counseling regarding postoperative exacerbation, preoperative assessment, avoiding factors known to precipitate perioperative and postoperative exacerbations of MS. The latter invites strict postoperative pain management, vigilant monitoring in recovery room with oxygen therapy/mechanical ventilation.

REFERENCES

1. Dierdorf, S. F., & Walton, J. S. (2006). Anesthesia for patients with rare and coexisting diseases. *Clinical anesthesia*, 5, 502-528.
2. Martz DG, Jr., Schreiberman, D.L., & Matjasko, M.J. (1998). Neurologic diseases. In: Benumof JL, editor. *Anesthesia and Uncommon Diseases*. 4th ed. Philadelphia: WB Saunders; p. 337.
3. Perlas, A., & Chan, V. W. (2005). Neuraxial anesthesia and multiple sclerosis. *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*, 52(5), 454-458.
4. Stoelting, R.K., & Dierdorf, S. (2002). Diseases of the nervous system. In: Stoelting RK, Dierdorf SF, editors. *Anesthesia and Coexisting Disease*. 4th ed. New York: Churchill Livingstone; p. 233-98.
5. Kulkarni, L. M., Sanikop, C. S., Shilpa, H. L., & Vinayan, A. (2011). Anaesthetic management in a patient with multiple sclerosis. *Indian journal of anaesthesia*, 55(1), 64.
6. Dorotta, I. R., & Schubert, A. (2002). Multiple sclerosis and anesthetic implications. *Current Opinion in Anesthesiology*, 15(3), 365-370.