

Anaesthetic Management of a Geriatric Patient with Parkinson's Disease, who was Posted for Emergency Laparotomy- A Case Report

RENUKA T HOLYACHI, SANTOSH KARAJAGI, SIDDANAGOUDA M BIRADAR

ABSTRACT

Parkinson's Disease (PD) is a relatively common neuro degenerative disorder in the geriatric age group. The pathophysiological changes in these patients predispose to major systemic complications like aspiration pneumonitis, respiratory depression, myo-

cardial depression and postural hypotension. Anaesthetic agents interact with the anti-Parkinsonian medication and this may lead to adverse effects. Here, we are presenting a case report of the anaesthetic management of a patient with a history of Parkinson's disease, who was posted for emergency laparotomy.

Key Words: Parkinson's disease, Anaesthesia, Perioperative complication

INTRODUCTION

Parkinson's Disease (PD) is a degenerative disease of the central nervous system which is caused by the loss of dopaminergic fibres from the basal ganglia. It affects all the age groups but about 20% cases have been seen in less than 50 years. PD affects approximately 3% of the population which is over 66 years of age [1].

Many patients may be newly diagnosed at the time of their pre anaesthetic examinations [2]. Few case reports are available, but controversies and dilemmas still exist regarding the role of spinal anaesthesia, the choice of opioid analgesics and depolarizing muscle relaxants like succinyl choline and optimal and the methods of continuation of the anti-Parkinsonian medication in the perioperative period [3]. This case report describes the anaesthetic management of a patient with a history of Parkinson's disease, who was posted for emergency laparotomy.

CASE REPORT

A 76 years old male, who weighed 65 kg and had Parkinson's disease was scheduled for emergency exploratory laparotomy for a suspected acute intestinal obstruction. He had been diagnosed as PD seven months back and was on irregular treatment with oral tab. ropinorole 1 mg; tab. trihexyphenydl 2 mg and tab. propranolol 10 mg, thrice daily. There was no history of hypertension, diabetes mellitus, ischaemic heart disease or bronchial asthma. He was a non smoker and a non alcoholic. There was a history of bladder dysfunction in the form of an increased urinary frequency and urgency. There was no history of any other long term medication or drug abuse or any psychiatric illness. There was no history of any previous anaesthetic exposure.

The patient had pill rolling tremors of his fingers at rest and cog wheel rigidity. He was oriented to the time, place and person. He was co-operative, with a history of elicitation and was able to recollect his medication regime, which was suggestive of no impairment in his memory and intelligence. He was able to perform his routine daily activities with assistance. His muscle power was 4/5 in both the upper and lower limbs. His sensory system was normal.

The patient's gait could be assessed with difficulty, due to an abdominal discomfort and it was slow, with a stooped posture.

He had pallor and signs of mild dehydration. He was edentulous, with adequate mouth opening, Mallampati grade II and normal neck flexion and extension movements. His pulse was 80 beats/min and it was regular, with good volume. His blood pressure was 150/80 mmHg in while he was in the supine position and it was 140/72 mmHg when he was in the sitting position. His respiratory rate was 40/min. Auscultation of his chest revealed bilateral crepitations. His cardiovascular system examination was normal. His routine blood investigations, ECG and electrolytes were within normal limits. His chest X-ray showed prominent bronchovascular markings and COPD changes. Ultrasonography of his abdomen showed features of intestinal obstruction and grade II prostatic hypertrophy, with no organomegaly or ascitis. The patient was accepted for anaesthesia with ASA grade III E.

The patient was given his usual anti Parkinsonian medications via a nasogastric tube, one hour before the operation. Nebulization with Salbutamol and ipratropium bromide was given pre operatively. Intra venous premedication was given with inj. glycopyrolate 0.2 mg, inj. ondansetron 4 mg, and inj. midazolam 1.5 mg. His monitoring included pulse oximetry, ECG, NIBP, ETCO₂, his temperature and his urine output. We had difficulty in recording his basal vital parameters due to the tremors and rigidity. A general anaesthesia with endotracheal intubation and a controlled ventilation was planned. After preloading with 500 ml of Ringer's lactate, pre oxygenation was done with 100% oxygen for 5 min. The patient was induced with inj. thiopentone 200mg iv. Rocuronium 30 mg iv was given to facilitate the tracheal intubation with a 8.5 cuffed endotracheal tube. The anaesthesia was maintained with O₂ + isoflurane + atracurium. Morphine 4 mg iv was used for the intra operative analgesia. The operative procedure, which lasted for three hours, consisted of the release of the adhesive bands in the ileal region. The intra operative urine output was 300 ml and the blood loss was around 400 ml. Two litres of crystalloids were used intra operatively. The patient was haemodynamically stable throughout the procedure.

At the end of the surgery, he was extubated, following a reversal with neostigmine and glycopyrolate. His post operative pain was managed with NSAIDs. His anti Parkinsonian medications were continued after surgery via a feeding tube for 2 days. He was then allowed to take them orally and he resumed his usual medication. His postoperative course was uneventful.

DISCUSSION

The degeneration of the dopaminergic neurons of the substantia nigra leads to PD. The autonomic dysfunction can manifest as orthostatic hypotension, leading to a sudden exaggerated response to the central neuraxial blockade. A delayed gastric emptying and a thermoregulatory or a genitourinary dysfunction are common. The patients show altered responses to the vasopressors [3-5].

Upper airway dysfunction can cause retained secretions, atelectasis, aspiration, lower respiratory tract infections and post extubation laryngospasms [6]. The Parkinsonism-Hyperpyrexia Syndrome (PHS) can occur in the perioperative period. It is characterized by high fever, extreme muscle rigidity, autonomic instability, altered consciousness, acute renal failure and a disseminated intravascular coagulation. PHS occurs in up to 4% of the PD patients; the mortality ranges from 4% for the treated to 20% for the untreated episodes. PHS can be prevented by an uninterrupted administration of medications. An early recognition and an aggressive treatment with fluid replacement, resuming of the dopaminergic therapy and supportive care, is necessary for a successful recovery [7].

Dopa agonists can be given orally, intravenously or transdermally. In the patients who are unable to take medications orally or through a gastric tube, parenterally administered anticholinergic drugs such as trihexyphenidyl, benzotropine, or diphenhydramine can be given. Levodopa and carbidopa are absorbed in the small intestine. A duodenal feeding tube may be useful [3]. Dopamine antagonists like droperidol, haloperidol, risperidone, metaclopramide, prochlorperazine, promethazine, phenothiazines, butyrophenones, etc should be avoided. Regional anaesthesia has advantages over general anaesthesia as it avoids the effects of the general anaesthetics and the neuromuscular blocking drugs, which may mask the tremors. The high incidence of nausea and vomiting which is associated with general anaesthesia, prevents the effective administration of the oral medications and exacerbation can occur in the postoperative period [8].

Thiopentone and propofol are relatively safe. Ketamine is contraindicated due to the exaggerated sympathetic responses which it

produces. There are numerous reports of muscle rigidity following the use of fentanyl [9]. Neuromuscular blocking agents can be used safely in patients with Parkinson's disease. Investigations which were done, have suggested that succinyl choline does not induce hyperkalaemia [10]. Halothane, which sensitizes the heart to catecholamines, should be avoided in patients who are on Levodopa. Isoflurane is safe, as it does not sensitize the myocardium to catecholamines.

Numerous case reports have described various approaches which were made to the perioperative management [4,5], but there are no definite treatment guidelines. The major goal of the management in the perioperative period, is to continue the administration of the dopamine replacement therapy.

CONCLUSION

The patients with PD can be safely anaesthetized, but a thorough preoperative assessment, minimizing the interruption of the drug therapy perioperatively and avoiding the known precipitating agents, are very important to reduce the postoperative mortality and the morbidity. Regional anaesthesia is the technique of choice, whenever it is possible.

REFERENCES

- [1] Rudra A, Rudra P, Chatterjee S, Das T, Ray M, Kumar P. Parkinson's Disease and Anaesthesia. *Indian J Anaesth.* 2007;51:382.
- [2] Kalenka A, Hinkelbein J. Anaesthesia in patients with Parkinson's disease. *Anaesthetist.* 2005; 54: 401 – 09.
- [3] Jankovic J. Complications and limitations of drug therapy for Parkinson's disease. *Neurology.* 2000; 55: S2-6.
- [4] Christopher B, Susan M, Calne RN. The management of medical and surgical problems in Parkinson's disease. *BCM J.* 2001;43, No. 4: 219-23.
- [5] Furuya R, Hirai A, Andoh T, Kudoh I, Okumura F. Successful perioperative management of a patient with Parkinson's disease by enteral levodopa administration under propofol anaesthesia. *Anesthesiology.* 1998; 89: 261-63.
- [6] Easdown LJ, Tessler MJ, Minuk J. Upper airway involvement in Parkinson's disease resulting in postoperative respiratory failure. *Can J Anaesth.* 1995; 42: 344-47.
- [7] Nicholans G, Pareira AC, Hall GM. Parkinsons disease and anaesthesia. *Br J Anaesth.* 2002; 89: 904-16.
- [8] Shaikh SI, Verma H. Parkinson's disease and anaesthesia. *Indian J Anaesth.* 2011; 55:228-34.
- [9] Comstock MK, Scamman FL, Carter JG, Moyers JR, Stevens WC. Rigidity and hypercarbia on fentanyl-oxygen induction. *Anesthesiology.* 1979; 51: S28.
- [10] Muzzi DA, Black S, Cucchiara RF. The lack of effect of succinylcholine on serum potassium in patients with Parkinson's disease. *Anesthesiology.* 1989; 71:322.

AUTHOR(S):

1. Dr. Renuka T Holyachi
2. Dr. Santosh Karajagi
3. Dr. Siddanagouda M Biradar

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Anaesthesiology,
2. Senior Resident, Department of Anaesthesiology,
3. Associate Professor, Department of General Medicine, BLDEU'S Shri BM Patil Medical College and RC, Bijapur-586103, Karnataka, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Renuka T Holyachi,
Assistant Professor, Department of Anaesthesiology,
BLDEU'S Shri BM Patil Medical College and RC,
Bijapur-586103. Karnataka, India.
Phone: 9886492178, 08352-262770
E-mail: renuka312@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS:

None.

Date of Submission: Oct 15, 2012
Date of Peer Review: Nov 05, 2011
Date of Acceptance: Nov 21, 2012
Date of Publishing: Jan 01, 2013