Parkinsonian crisis for emergency laparotomy: A case report

A Kohli, A Swain, P Subbramaniam, S Thakur, S Khambra, P Bhadoria

Citation

A Kohli, A Swain, P Subbramaniam, S Thakur, S Khambra, P Bhadoria. *Parkinsonian crisis for emergency laparotomy: A case report*. The Internet Journal of Anesthesiology. 2008 Volume 21 Number 1.

Abstract

Managing a patient with Parkinson's disease in crisis presenting for anaesthesia is a rare but challenging scenario for the anaesthesiologist. Here we present the successful anaesthetic management of a case of parkinsonian crisis for emergency laparotomy. The role of enteral levodopa through nasogastric tube is emphasized.

INTRODUCTION

Parkinson's disease is a common neuro-degenerative disorder characterized by paucity or slowness of movement (bradykinesia), tremors at rest, rigidity, shuffling gait and flexed posture. The anti parkinsonian drugs increase the supply of dopamine, affect the biochemical balance of dopamine or act as a substitute. Most of the anaesthetic drugs usually interact with antiparkinsonian medication and hence the optimal management of patients with parkinson's disease is controversial. ([1]) In addition, there are several diseases and drug induced aberrations namely aspiration pneumonia, myocardial irritability, hypotension, hypertension and respiratory impairment. With extremes of age, poor compliance with antiparkinsonian drugs is inevitable, thus leading to parkinsonian crisis that can have profound anaesthetic implications. Here we present a case of parkinson's disease successfully managed with enteral levodopa for emergency surgery.

CASE REPORT

A seventy four year old man with parkinson's disease presented to surgery emergency with complications of abdominal pain, vomiting and distention of abdomen for the past 5 days. He had been suffering from parkinson's disease for 10 years and was well controlled on Tab Syndopa 250 mg TDS.

A diagnosis of perforation peritonitis was made and emergency laparotomy planned. On examination, the patient had a vacant stare, bradykinesia and generalized muscle rigidity (due to his inability to comply with oral antiparkinsonian drug therapy), a labile volume status (pulse rate=90 per minute, thready, Blood pressure=110/70 mm Hg), poor chest condition along with metabolic alkalosis on blood gases.

Preoperatively, the patient was given levodopa and bromocriptine through ryle's tube which was administered twice over a period of four hours, resulting in a dramatic improvement in neurological symptomatology. In the meantime, the patient was also volume resuscitated with I.V fluids (1 L crystalloid + 500 ml voluven) to maintain a CVP of 10-14 cm H2O. on arrival to the operative room, patient was preoxygenated for 3 minutes and then anaesthesia was induced with O2 + Propofol 100mg I.V + rocuronium bromide 50 mg I.V (RSI). Anaesthesia was maintained with oxygen,nitrous oxide, sevoflurane and rocuronium. Analgesia was achieved with low dose morphine and ketorolac 1 amp i/m. Surgery lasted for around 3 hours with stable intraoperative hemodynamics, adequate urine output with no adverse events. Intraoperatively one tablet of syndopa (Levodopa 100/Carbidopa 10) was given through nasogastric tube every 2 hourly. Neuromuscular blockade was reversed with Glycopyrollate and Neostigmine but because of poor reflexes and mentation, patient's trachea was not extubated and thus shifted to I.C.U for ventilator support. In I.C.U, antiparkinsonian drugs were given four hourly through ryle's tube which gradually resulted in improvement in neurological status and therefore facilitated weaning and extubation after 12 hours of surgery.

After 24 hours, the patient was shifted from I.C.U to postoperative surgical ward with satisfactory recovery.

DISCUSSION

Parkinsonism is a disease affecting approximately 3% of the population over 66 years of age having a male preponderance. (3) (4) Although exact etiology is unknown, increasing age is identified as the most consistent risk factor. (5) The neurodegenerative death of substantia nigra leads to classical triad of resting tremor, muscle rigidity and bradykinesia. (6) (7)

The mainstay of treatment is drug therapy using Levodopa or Dopamine receptor agonists. (5) L-dopa can only be administered enterally and has a short t1/2 (1-3 hours). (5) It is absorbed from the proximal small bowel and therefore cannot be given as a suppository. Surgery becomes an important precipitating factor in uncontrolled and noncompliant patients of parkinson's disease for crisis. Thus, it is important to ensure that patients with parkinson's disease take their L-dopa medication regularly throughout the preoperative period so that they do not land in a condition of parkinsonian crisis thus complicating the anaesthetic management further, which was exactly what happened in our case.

Patients with parkinson's disease most commonly present for urologic, ophthalmologic or orthopedic procedures but can also present for emergency and elective surgical procedures. (5) Respiratory complications particularly aspiration pneumonia is the most common cause of death in these patients. (8) Due to involvement of intrinsic laryngeal muscles and other muscles surrounding upper airway dysfunctions may occur causing retained secretions, atelectasis and respiratory infections. (11) Steatorrhoea, orthostatic hypotension, cardiac arrhythmias and dependent edema may also occur. (5)

Regional anaesthesia has obvious advantages over general anaesthesia (5),as it avoids the effects of general anaesthesia and the airway complications mentioned earlier as well as providing good postoperative analgesia and avoiding postoperative nausea and vomiting hence allowing resumption of oral anti parkinsonian drug therapy. For surgical procedures not amenable to regional anaesthesia, special precautions should be taken. Drugs like phenothiazines, butyrophenones and metoclopramide which exacerbate parkinson's disease should be avoided. Although there are a few case reports describing parkinsonian episodes in patients receiving Thiopentone (9)(10), it has not been directly implicated in exacerbating parkinsonian symptoms. Propofol is an ideal agent (12) because of rapid metabolism and emergence profile and ability to abolish tremors while ketamine is theoretically contraindicated in parkinson's disease because of an exaggerated sympathetic response. Inhalational agents such as Halothane which sensitise heart to action of catecholamines should be avoided in patients taking Levo-Dopa. Isoflurane and sevoflurane are less arrhythmogenic but hypotension is still a concern. Opioids especially fentanyl and morphine may be associated with increased muscle rigidity in these patients therefore potent nonsteroidal analgesics should be used for postoperative analgesia. (5)(14)(15) Neuromuscular blockers can be used safely however Succinylcholine has been reported to cause hyperkalemia in patients with parkinson's disease. (16) For patients taking Levo-Dopa, it is essential to ensure that they do not miss L-Dopa medication in perioperative period. These can be taken either with sips of water or by nasogastric tube.

Enteral Levodopa has a clear advantage over intravenous levodopa and should be preferred. (17) Treatment with intravenous Levodopa alone may be dangerous during general anaesthesia because of interactions with anaesthetic agents. It may increase the risk of a variety of arrhythmias or hypotension as reported previously. These side effects of Levodopa are mediated through Dopamine.

CONCLUSION

In conclusion, we report the preoperative stabilization of a patient in parkinsonian crisis by using Levodopa through nasogastric route and continual of the same during propofol anaesthesia intra operatively and early postoperative period. Though this patient underwent illeal surgery, absorption of Levodopa from stomach and duodenum was able to stabilize the symptoms of parkinsonian crisis and result in a favorable postoperative outcome.

References

1. Severn AM. Parkinsonism and its anaesthetist. BJA 1988;61(6): 761-70.
2. Kurlan R, Nuh JG, Woodward WR et al. Duodenal and gastric delivery of Levodopa in Parkinsonism. Ann Neurol 1988;23:589-95.
3. Zhang Z-X, Roman GC. Worldwide occurance of Parkinson's disease. Neuroepidemiology 1993;12:195-208.
4. Moghul S, Rajput AH, Rajput R. Prevalence of movement disorders in elderly community residents. Neuroep 1994;13:175-178.
5. Nicholson G, Pereira AC, Hall GM. Parkinson's disease and anaesthesia. BJA 2002; 89:904-916.
6. Kalenka A, Hinkelbein J. Anaesthesia in patients with Parkinson's disease. Anaesthetist 2005;54 (4):401-9.
7. Lang AE, Lozamo AM. Parkinson's Disease. N Eng J Med 1998;339:1044-53.
8. Hoehn MM, Yahr MD. Parkinsonism: Onset, Progression

and Mortality. Neurology 1967;17:427-442.
9. Eastdown LJ, Tesslor MJ, Minuk J. Upper airway involvement in Parkinson's disease resulting in postoperative respiratory failure. Can J Anaesth 1995; 42: 344-7.
10. Urarchick S, Smith DS. Parkinsonian symptoms during emergence from general anaesthesia. Anaesthesiology 1995; 82: 305-07.
11. Vincken WG, Gauthier SG, Doufuss RE etal. Involvement of upper airway muscles in extrapyramidal diseases, a cause of airflow limitation. N Engl J Med 1984;311:432-42.
12. Anderson BJ, Marks PV, Futter ME. Propofol-contrasting effects in movement disorders. Br J Neurosurgery 1994;8:387-8.
13. Hetherington, Rosenblatt RM. Ketamine and paralysis agitans. Anaesthesiology 1980; 52: 527.
14. Klausner JM, Caspi J, Lelchuk S et al. Delayed muscle rigidity and respiratory depression following fentanyl anaesthesia. Arch Surgery 1988;123:66-7.
15. Wand P, Kuschinsky K, Sontag KH. Morphine induced muscle rigidity in rats. Eur J of Pharmac 1973;24:189-93.
16. Grawlee GP. Succinylcholine induced hyperkalaemia in patients with Parkinson's disease. Anaesth Analg1980; 59: 444-6.
17. Furuya R, Hirai A, Andoh T etal. Successful perioperative management of a patient with parkinson's disease by enteral levodopa administration under propofol anaesthesia. Anaesthesiology 1998;89(1):261-3.
18. Minsker DH, Scriabine A, Stokes AL et al. Effects of L-dopa alone and in combination with Dopa Decarboxylase inhibitors. Experientia 1971;27(5):529-31.

Author Information

Amit Kohli, MD
Senior Resident, Department of Anaesthesiology and Intensive Care, Maulana Azad Medical College

Amlan Swain, MD
Senior Resident, Department of Anaesthesiology and Intensive Care, Maulana Azad Medical College

Prashant Subbramaniam, MBBS
Post graduate resident, Department of Anaesthesiology and Intensive Care, Maulana Azad Medical College

Sunil Thakur, MBBS
Post graduate resident, Department of Anaesthesiology and Intensive Care, Maulana Azad Medical College

Sunita Khambra, MD
Senior Specialist, Department of Anaesthesiology and Intensive Care, Maulana Azad Medical College

Poonam Bhadoria, MD
Professor, Department of Anaesthesiology and Intensive Care, Maulana Azad Medical College