



Anaesthetic management of a case of Parkinson's disease for cataract surgery in Sub-Saharan Africa

Nga Nomo Serge¹, Djomo Tamchom Dominique², Chewa Gisèle¹, Iroume Cristella¹, Nkoumou Samson¹, Chobli Martin

Abstract: Parkinson's disease is a chronic degenerative neurological disease affecting the central nervous system and responsible for progressive disorders: slow movements, tremor, rigidity and cognitive disorders [1,2,3,4]. The symptoms of Parkinson's disease are related to the loss of about 70% of dopaminergic neurons. Data on anesthesia of the Parkinsonian patient in sub-Saharan Africa are extremely rare. Current treatments are aimed at correcting brain dopamine deficiency or its consequences. We report here a case of general anesthesia in a Parkinson patient for cataract surgery in sub-Saharan Africa, managed without incident. The purpose of this presentation is to reveal the essential points that can complicate the perioperative management of the Parkinsonian patient in an environment unfavorable to the practice of general anesthesia.

Keywords: Parkinson's disease, general anesthesia, cataract surgery

Introduction

Parkinson's disease is a chronic neurological degenerative disease affecting the central nervous system and responsible for progressive disorders: slow movements, tremor, rigidity and cognitive disorders [1,2,3,4]. The symptoms of Parkinson's disease are related to the loss of about 70% of dopaminergic neurons. It is the second neurodegenerative disease of the elderly in terms of frequency after Alzheimer's disease [3]. Its prevalence in Africa is estimated at 1.3 million patients [2, 5]. Data on anesthesia of the Parkinsonian patient in sub-Saharan Africa are extremely rare. Current treatments are aimed at correcting brain dopamine deficiency or its consequences. These drug therapies may interact with the drugs used during general anesthesia. We report here a case of general anesthesia in a parkinsonian patient for cataract surgery, managed without incident. The purpose of this presentation is to reveal the essential points that can complicate the perioperative management of the Parkinsonian patient in an environment unfavorable to the practice of general anesthesia.

Case report

It was a 75-year-old patient who was referred for anesthesia consultation at the Essos-Yaoundé Hospital Center for senile cataract. He weighed 70 kg and had Parkinson's disease for 12 years. It was well balanced by oral administration of Levodopa in 5 daily doses. The patient's medical history evoked parasomnia-type sleep disturbances. The clinical examination found orthostatic hypotension evoking the existence of a dysautonomic syndrome. There were no digestive disorders such as hypersalivation, gastroesophageal reflux or deglutition disorder.

¹ Department of anesthesiology and intensive, Essos Hospital Center – Yaounde

² Department of anesthesiology and intensive care of the Gynecological, Obstetrical and Pediatric Hospital of Douala

³ Department of anesthesiology and intensive care, Faculty of Health Sciences of Cotonou.

Corresponding author: Dr NGA NOMO SERGE
sergesviviervivier@yahoo.fr
Tel: (+237) 242 655 711

The patient was informed of the potential risk of worsening of symptoms and cognitive impairment postoperatively. Levodopa was given orally one hour before surgery. The patient was given anesthesia pre-induction 150 micrograms of clonidine microinfusion 15 minutes. Anesthetic induction was traditional: Propofol 200 mg IV, Fentanyl 150 µg IV, Vecuronium bromide 6 mg IV. Maintenance of anesthesia was provided by the administration of inhaled Sevoflurane and Fentanyl IV. The surgical technique was that of manual micro-incision which consists of using instruments to remove the lens through a small incision. The duration of the procedure was one hour. No incident or accident was reported during the operating period. The patient's awakening was calm. The extubation was done on the operating table and the patient was transferred to the room for further care. The resumption of oral dopamine at the usual dose was allowed to complete awakening. The immediate operative follow-ups were simple.

Discussion

The neurodegenerative death of dopaminergic neurons of the pars compacta of the substantia nigra leads to the classical triad of resting tremor, muscle rigidity, and bradykinesia of Parkinson's disease [6,7,8]. Among degenerative neurological diseases, Parkinson's disease is the one that poses more difficulties for the anesthetist during perioperative management. In Africa the life expectancy of populations is growing, and it is not uncommon for an anesthesiologist to be confronted during his career with the management of a patient suffering from Parkinson's disease.

The symptoms of Parkinson's disease are related to the loss of about 70% of dopaminergic neurons. The degeneration of pigmented cells in the nigrostriatal dopaminergic system results in a decrease in dopamine secretion in the caudate nucleus [9]. Dopaminergic insufficiency in the basal ganglia results in hyperactivity of the cholinergic neurons of the striated nucleus, which explains the stiffness and hypoactivity of the pallidum responsible for akinesia and tremor [10, 11, 12]. Dopamine deficiency, which is responsible for an imbalance between the dopaminergic (deficient) and cholinergic (hyperactive) systems, is clinically translated by the classic triad combining hypokinesia, tremor and rigidity, resulting in disorders of posture and gait [8, 9, 10, 11, 12]. The life expectancy of patients with Parkinson's disease has increased thanks to levodopathy and the development of neurostimulatory surgery. The interactions between the drugs used for the treatment of this pathology and the anesthetic agents are frequent and can induce modifications of the anesthetic protocol. The anesthesia consultation should focus on identifying the symptoms that could potentially complicate the perioperative period of the Parkinsonian patient and seek co-morbidities in this often elderly patient. During the preoperative evaluation, the anesthesiologist must specify the seniority of the disease, seek the repercussions of the disease on the various systems of the body (respiratory disorders, disruption of digestive function, dysautonomic syndrome, impairments central nervous system, neuropsychiatric disorders ...). The anesthetist must know the patient's daily regimen. This therapy will be continued without interruption until the morning of surgery [13].

Contribution of the authors

All authors contributed to the realisation of typescript.
All authors contributed to the behaviour of this job.
All authors also declare to have read and approved the finished version of the typescript.

regimen. This therapy will be continued without interruption until the morning of surgery [13]. In our observation, the pre-anesthetic evaluation did not find a disturbance of the major functions that could negatively impact the anesthetic procedure. Parasomnia and dysautonomic syndrome have no serious consequences for cellular homeostasis and do not require specific treatment. The general anesthesia procedure was well tolerated by the patient. The explanation could be a perfect balance of Parkinson's disease with Levodopa. The best management of the postoperative phase in our observation could be explained by the absence of interruption of Levodotherapy.

Conclusion

The anesthetic management of patients with chronic neurological diseases requires special attention. The preoperative evaluation of the patient who has Parkinson's disease is essentially based on clinical evidence. The prevention of adverse events during the per and post-operative periods is based on a good pre-operative specific preparation. Anesthetists in developing countries must master the practice of anesthesia in this particular field, because they will be regularly exposed to it because of the frequency of this pathology and the gradual increase in the life expectancy of the population African.

Conflicts of interests: The authors declare no conflict of interests

References

- [1]. Okubadejo Njideka, Ojo Oluwadamilola, Oshinaike Olajumoke. Clinical profile of parkinsonism and Parkinson's disease in Southwestern Nigeria. *Neurology*. 2010;10(1):1-6
- [2]. Cilia Roberto, Akpalu Momodou Cham, Bonetti Alba, Marianna Amboni, Faceli Elisa. Parkinson's disease in sub-Saharan Africa: step-by-step into the challenge. *Neurodegen Dis Manage*. 2011;1(3)
- [3]. Philippe Damier. Maladie de Parkinson : facteurs environnementaux et prévention. *Cholé-Doc*. 2018;163:1-4
- [4]. Kalia LV, Lang AE. Parkinson's disease. *Lancet* 2015;386:896-912.
- [5]. Nomena Finiavana Rasaholiarison, Julien Razafimahefa, Jenny Larissa Rakotomanana, Alain Djacoba Tehindrazanarivelo. Frequency and clinical profile of Parkinson's disease and other Parkinsonian syndromes seen in the Department of Neurology at the Befelatanana Hospital Antananarivo. *Pan African Medical Journal* 2019;33:229.
- [6]. Navdeep Goyal, Hoday wajifdar, Aruna jain. Anaesthetic Management of A Case of Parkinson's Disease for Emergency Laparotomy Using Enteral Levo-dopa Intraoperatively *Indian Journal of anaesthesia* 2007;51(5):427- 428
- [7]. Kalenka A, Hinkelbein J. Anaesthesia in patients with Parkinson's disease. *Review Anaesthetist* 2005 ;54:401-9; 410-1.
- [8]. Lang AE, Lozano AM. Parkinson's disease: first of two parts. *N Engl J Med* 1998; 339: 1044–53.
- [9]. Ollinet C, Bedague D, Carcey J, et al. La chirurgie fonctionnelle des mouvements anormaux involontaires : prise en charge anesthésique. *Ann Fr Anesth Réanim* 2004 ; 23 : 428-32.
- [10]. Nicholson G, Pereira AC, Hall GM. Parkinson's disease and anaesthesia. *British J Anaesth* 2002; 89 : 904 – 16.
- [11]. Fitzgerald MJT. Basal ganglia. In Fitzgerald MJT, ed : *Neuroanatomy Basic and Clinical*, 3rd Edn. London : WB Saunders Company Ltd, 1996 : 247 – 55.
- [12]. A Rudra 1, Pallab Rudra, Suman Chatterjee, T Das, Manjushree Ray, P Kumar. Parkinson's Disease and Anaesthesia. *Indian Journal of Anaesthesia* 2007; 51 (5) : 382-388.
- [13]. Stotz M, Thümmeler D, Schürch M, et al. Fulminant neuroleptic malignant syndrome after perioperative withdrawal of anti-Parkinsonian medication. *Br J Anaesth* 2004 ; 93 : 868-71.