

A patient with haloperidol induced laryngeal dystonia

D. F. P. M. PEEK (*)

Abstract : We discuss the case of a forty-nine year old patient with haloperidol induced laryngeal dystonia (LD).

Laryngeal dystonia is a life threatening, very rare medical condition which is difficult to diagnose. It can occur after a short treatment of a patient with atypical antipsychotics. LD can induce severe respiratory insufficiency leading to hypoxemia and death. Due to the lack of diagnosis, we performed an emergency tracheotomy because of severe respiratory distress syndrome. An emergency tracheotomy can be a life-saving procedure in patients with LD.

Keywords : Laryngeal dystonia ; haloperidol ; tracheotomy.

INTRODUCTION

Antipsychotics are frequently used in the field of anesthesia and psychiatry. They can be classified as typical (classical) antipsychotics and atypical antipsychotics. Haloperidol is a typical antipsychotic and is used as a first-line medication in treating psychotic symptoms such as delirium. It is available in oral, intramuscular and intravenous formulations. The disadvantage of typical antipsychotics is that they have more side effects than atypical antipsychotics such as extrapyramidal symptoms (EPS).

We report the case of a patient who developed laryngeal dystonia after three days of treatment with haloperidol.

CASE REPORT

A forty-nine year old male patient was referred to the outpatient clinic of the neurology department. Since three weeks he was complaining of a feeling of nausea, excessive sweating and acoustical hallucinations. Further medical history revealed mild asthma, bronchitis and atypical stomach complaints. There was no history of surgery, allergy, intoxication, drug abuse or psychiatric disease. Current medication consisted of salmeterol/flucitason, fexofenadine and temazepam. The patient was immediately admitted to the hospital.

Firstly, we considered an atypical epileptical insult or psychiatric problem. A CT-Cerebrum and EEG were performed and revealed no abnormalities. The patient was able to be discharged from the hospital a few days later.

After three weeks the patient presented himself again at the emergency department with acute confusion, restlessness while he hadn't been able to sleep properly since two weeks. Physical examination again revealed no abnormalities. Anti-viral medication (due to the suspicion of a viral encephalitis) and anti-psychotic medication (haloperidol) were started. Subsequently his neurological status deteriorated rapidly from extremely agitated to a state of apathy within three days. Further medical investigations were performed : EEG, CT-Cerebrum, MRI/MRA-Cerebrum and cerebrospinal fluid sample which showed no abnormalities. After three days the patient acutely showed periods of severe respiratory distress with extreme stridor and hypoxia for which initially we did not have any explanation. These periods of respiratory distress lasted approximately three minutes and terminated spontaneously. During the events vital signs revealed tachycardia and hypoxia. The events repeated themselves every 30 minutes and subsequently increased in frequency within a few hours. Surprisingly between the periods of respiratory distress the patient had absolutely no signs of respiratory problems.

Therefore a tracheotomy was performed under local anesthesia. The ENT surgeon used lidocaine 1% to a maximum dose of 5 mg/kg subcutaneously. After thorough investigation of the patient's medication we noticed that there had been an increase of the dosage of haloperidol within the last 72 hours after admittance (from initially 25 mg a day to

D. F. P. M. PEEK (*), M.D.

(*) Dept of Anesthesiology, University Hospital Maastricht, PO box 8800, 6202 AZ, Maastricht, The Netherlands.

Corresponding author : D. F. P. M. Peek, Dept of Anesthesiology, University Hospital Maastricht, PO box 8800, 6202 AZ, Maastricht, The Netherlands. E-mail : drpeek@wxs.nl

50 mg a day). This alerted us to the possible diagnosis antipsychotic induced laryngeal dystonia (LD) (1, 2).

After the tracheotomy procedure the patient initially had no respiratory problems but was admitted to the intensive care unit with an aspiration pneumonia.

During further course the patient was treated for an ileus and urosepsis and was successfully decannulated after a few weeks and could be discharged in good medical condition from the hospital after four weeks. Concerning his neurological disease we finally diagnosed encephalitis lethargica.

DISCUSSION

Haloperidol, a butyrophenone, is used as a first-line medication in treating psychotic symptoms. But haloperidol has significant disadvantages such as an increased incidence of extrapyramidal symptoms including Parkinsonism, neuroleptic malignant syndrome, and a laryngeal dystonia. Also, haloperidol (like droperidol) (3) can cause prolongation of the QT-interval which can lead to torsade de pointes and ventricular fibrillation. Ten to thirty percent of patients treated with neuroleptics develop dystonias which differ in severity. Also droperidol (also a butyrophenone), which is frequently used as an anti-emetic, can cause dystonic reactions (4). Dystonia is a neurological movement disorder in which sustained muscle contractions cause twisting and repetitive movements or abnormal postures. Dystonias can be focal, segmental or generalized. A dystonic reaction typically results in loss of control of onset and offset of muscle contraction. In the larynx region the adductor muscles and abductor muscles are involved. Acute dystonia, which can develop hours to days after initiating the medication, is the most life-threatening condition because of the possibility of aspiration of food or respiratory insufficiency resulting in a hypoxemic condition. The risk factors involved in laryngeal dystonia are particularly young males aged under thirty years, hypersensitivity to antipsychotics, family history, cocaine abuse and head trauma. The pathophysiologic basis of the extrapyramidal adverse reaction is found in an insufficient activity of nigrostriatal dopamine. Antipsychotics and especially the typical antipsychotics cause EPS via the blockade of dopamine D2 receptors in nigrostriatal dopaminergic neurons which can lead to extrapyramidal symptoms such as larynx dystonia (LD) (5). Atypical antipsychotics cause less EPS

because they weakly bind to D2 receptors and are easily displaced by endogenous dopamine in the human striatum.

Dopamine and anticholinergics have mutually antagonistic function in the nigrostriatal system and therefore anticholinergics can be used for treating dystonic reactions.

Haloperidol induced laryngeal dystonia is a very rare, life-threatening syndrome with a difficult diagnosis. The syndrome may be misdiagnosed as tetanus, hysteria, catatonia or convulsions. There have been several antipsychotic related fatal cases in patients receiving haloperidol who developed LD (6, 7). The haloperidol dosage ranged in these cases from 25 mg to 140 mg a day. Droperidol induced dystonic reactions are also very rare and have been described in dosages as low as 1 mg intravenously (4). More frequent side effects encountered in anesthesia practice are hallucinations, drowsiness, shivering or anxiety (8) LD can be treated with diphenhydramine (9) (antihistamine with a potent anticholinergic function), clozapine (10) (atypical antipsychotic with anticholinergic side effects), tracheotomy (11) or anticholinergics (1). However, in this case we decided to perform a tracheotomy because we initially had no diagnosis and the patient experienced increasing respiratory problems with hypoxia.

It is important to familiarize anesthesiologists with this syndrome because haloperidol is frequently used in the field of anesthesia. After ruling out allergic reactions or other causes of acute respiratory obstruction, the diagnosis of LD in a patient receiving haloperidol should be considered.

CONCLUSION

We report the case of a patient treated with haloperidol for three days after which the patient developed life threatening laryngeal dystonia. Antipsychotic induced laryngeal dystonia is a very rare medical condition. Characteristic symptoms, particularly acute intermittent dyspnea, should be familiar to every clinician prescribing this medication. Performing an acute tracheostomy can be a life-saving procedure.

References

1. Christodoulou C., Kalaitzi K., *Antipsychotic drug-induced acute laryngeal dystonia: Two case reports and a mini review*, JOURNAL OF PSYCHOPHARMACOLOGY, **19**, 307-332, 2005.

2. Mellacheruvu S., Norton J. W., Schweinfurth J., *Atypical antipsychotic Drug-Induced Acute Laryngeal Dystonia*, J. CLIN. PSYCHOPHARMACOL., **27**, 206-207, 2007.
3. Dershwitz M., *Droperidol : should the Black Box Be Light Gray ?*, J. CLIN. ANESTH, **14**, 598-603, 2002.
4. Park C. K., Choi H. Y., Oh I. Y., Kim M. S., *Acute Dystonia by Droperidol during intravenous Patient-Controlled Analgesia in Young patients*, J. KOREAN MED. SCI., **17**, 715-7, 2002.
5. Matsui-Sakata A., Ohtani H., Sawada Y., *Pharmacokinetic pharmacodynamic analysis of antipsychotic-induced extrapyramidal symptoms based on receptor occupancy theory incorporating endogenous dopamine release*, DRUG METAB. PHARMACOKINETIC, **20**, 187-99, 2005.
6. Ketai R., Mathews J., Mozden J., *Sudden death in a patient taking haloperidol*, AM. J. PSYCHIATRY, **136**, 112-113, 1979.
7. Modestin J., Krapf R., Boker W., *A fatality during haloperidol treatment : mechanism of sudden death*, AM. J. PSYCHIATRY, **138**, 1616-1617, 1981.
8. Richards J., Schneir B., *Droperidol in the emergency department : is it safe ?*, J. EMERG. MED., **24**, 441-7, 2003
9. Fines R. E., Brady W., Martin M., *Acute Laryngeal Dystonia Related to neuroleptic agents*, AMERICAN JOURN. EMERG., **17**, 319-320, 1999.
10. Lanzaro M., Petrone R., D'Ambrosio A., *Successful treatment with clozapine in a patient with neuroleptic-induced acute laryngeal Dystonia*, EUR. PSYCHIATRY, **16**, 261-2, 2001.
11. Chakravarty A., *Neuroleptic-Induced Acute Laryngeal Dystonia Causing Stridor, A LESSON TO REMEMBER. MOVEMENT DISORDERS*, **20**, 1082-3, 2005.