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Progress in Neuro-Psychopharmacology & Biological Psychiatry



Letter to the Editor (Case report)

Laryngeal dystonia in a patient with bilateral anterior cerebral artery infarction during treatment of delirium with haloperidol

1. Introduction

Dystonia is defined as an abnormal movement characterized by sustained muscular contractions, frequently causing twisting and repetitive movements or abnormal posturing. Antipsychotics are one of the most common drugs that cause dystonic reactions (Fines et al., 1999). Laryngeal dystonia (LD) is a potentially fatal type of dystonia caused by laryngeal muscles' spasms. Infarction of the anterior cerebral artery (ACA) territory accounts for only 0.3–4.4% of cerebral infarctions reported. Bilateral infarction is even more rare (Yamaguchi et al., 2004). Stroke is a known predisposing factor for delirium. Delirium is more frequent after total anterior circulation infarction (McManus et al., 2007). Here, we report a male patient, with bilateral ACA infarction, who developed LD during delirium treatment with low dose haloperidol.

2. Case report

A 50-year-old male was admitted to the Emergency Department of Uludag Univesity Medical Faculty with the complaint of somnolence that was present for 4 h. It was reported that he drank 3 l of beer 12 h before admission to the hospital. His medical history included smoking (20 cigarettes/day/30 years), drinking beer (3 l/day/ 25 years), snoring and sleep apnea. His neurological examination revealed somnolence, abulia and effacement of the left nasolabial sulcus. With the putative diagnosis of stroke, a cranial diffusion magnetic resonance imaging (MRI) showed bilateral acute infarction in the interhemispheric region of the frontal lobe. His vital signs (blood pressure: 120/80 mmHg, body temperature: 36.7 °C, respiratory rate: 16/min and pulse: 80/min), electrocardiography and blood tests (thyroid, hepatic, renal and hematological functions) were normal. A urine drug screen was not done. He was admitted to the Neurological Intensive Care Unit with the diagnosis of ischemic stroke. He was put on heparin 30,000 IU/day treatment. On the second day of his hospitalization, he became restless, disoriented to time and place. There was a fluctuation in his consciousness. He also developed visual hallucinations and was unable to make meaningful responses to the simplest questions. With these clinical features, he was referred to Psychiatry Department for consultation. There was no metabolic problem or infection that could cause delirium. He received the diagnosis of delirium due to multiple etiologies (291.0; alcohol withdrawal delirium+293.0; delirium due to stroke), as determined on the basis of the Diagnostic and Statistical Manual of Mental Disorders, fourth edition, Text Revision (APA, 2000) and was put on oral scheduled haloperidol 2 mg/day treatment. Visual hallucinations

alleviated with haloperidol treatment but disorientation continued. On the 8th day of the antipsychotic treatment, 3 episodes of flushing, dyspnea and sweating followed by cyanosis lasting about 5 min were observed. During his dyspneic attacks, he experienced severe respiratory distress along with choking sensation, tachypnea, tachycardia and inspiratory stridor. Pulse oxymetry decreased to 60% in room air. Acute LD was considered clinically and haloperidol was stopped. During the next 48 h, after cessation of haloperidol, 3 similar episodes recurred. Following the 3rd episode, intravenous biperiden 5 mg infusion was given once and one more LD episode occurred in the next 24 h. He was totally free of LD 72 h after cessation of haloperidol and since delirium continued, quetiapine 25 mg/day was started. Delirium cleared on the 4th day of quetiapine treatment. The patient underwent polysomnographic evaluation and "obstructive sleep apnea syndrome (OSAS)" was diagnosed. He was provided with continuous positive airway pressure therapy. Cerebral digital subtraction angiography (DSA) showed hypoplasia of the right ACA and occlusion of the left ACA by thrombus originating from the left internal carotid artery (ICA). Carotid Doppler ultrasonography showed 10×6 mm atheromateous plaque in the bulbus segment of the left common carotid artery extending to ICA and resulting in 50% stenosis. Hypoplasia of the A1 segment of the right ACA and occlusion of the left ACA due to thrombus in the left ICA were shown by cerebral DSA in our patient. The Naranjo scale (Naranjo et al., 1981) pointed to a possible relationship between haloperidol and laryngeal dystonia.

3. Discussion

The pathophysiological basis of the extrapyramidal adverse reaction is thought to be associated with insufficient nigrostriatal dopamine activity. Any medication that antagonizes nigrostriatal dopamine function has the potential for causing dystonic reactions (Russell et al., 1996). Although dystonic reactions like torticollis and retrocollis are easily diagnosed, LD which is the result of involuntary contractions of abductor and adductor laryngeal muscles can be missed. Laryngeal dystonia which is often accompanied by sympathetic hyperactivity and respiratory distress may be misdiagnosed as panic attack, anaphylaxis and airway obstruction (Christodoulou and Kalaitzi, 2005). Risk factors for acute LD include young males, history of hypersensitivity, family history, high doses of high-potency antipsychotics, cocaine, amphetamine or alcohol abuse, presence of affective disorders, hypocalcaemia, dehydration, mononucleosis, uremia, pneumonia, hyperthyroidism, hypoparathyroidism, recent stroke history, AIDS, head trauma, basal ganglia disorders, metabolic disorders and other preexisting neurodegenerative disorders (Mellacheruvu et al., 2007). Medication-related

dystonic reactions arise quite suddenly, usually within the first 4 days of exposure to the inciting drug. (Fines et al., 1999). LD developed on the 8th day of treatment with haloperidol in this case. A score of 3 on The Naranjo Adverse Drug Reactions Probability Scale indicated that there was a possible association between haloperidol and laryngeal dystonia in this patient.

Embolism or thrombosis of the A1 segment with contralateral A1 hypoplasia or aplasia may cause bilateral ACA territory infarction (Yamaguchi et al., 2004). Proximal occlusion of ACA is well tolerated as long as contralateral ACA supplies it with blood through anterior communicating artery. Unfortunately, right ACA of our patient was hypoplasic so when his left ACA was occluded by a thrombus, his right ACA wasn't able to provide it with blood and bilateral infarction of ACA occurred. Clinical presentation in bilateral ACA infarction includes somnolence, anxiety, agitation, acute akinetic mutism, abulia, alexia in the left visual field, anomia in the left, alexia with agraphy, visual and tactil neglect and speech disorders. Our patient presented with abulia and somnolence.

Alcohol withdrawal has been associated with dystonia (Cardoso and Jankovic, 1993) but LD associated with alcohol withdrawal has not been reported. LD caused by antipsychotics was reported in the literature (Mellacheruvu et al., 2007; Duggal, 2007; Fines et al., 1999; Chakravarty, 2005). Dystonia can develop after stroke (Alarcón et al., 2004). To best of our knowledge we have not come across of any laryngeal dystonia developing in association with stroke in the literature so far. Our patient with bilateral ACA infarction developed LD during delirium treatment with low dose haloperidol. Different from the literature our case has late-onset LD with low dose antipsychotic. ACA infarction, OSAS and chronic alcohol intake were the risk factors for development of delirium in our case. Our patient did have several precipitating factors that may contribute to the development of LD, including male gender, antipsychotic drug use, stroke, chronic alcohol intake or alcohol withdrawal. Presence of several contributing factors makes it hard to define the exact etiology of LD in this case and this complicated clinical situation makes it worth reporting.

4. Conclusion

LD which may be difficult to diagnose should be kept in mind when respiratory difficulty develops in a patient taking antipsychotic drug. Diagnosing the picture will provide the patient with right treatment approach.

Acknowledgment

We thank Bulent Yildirim, MD for sharing his prior experiences of laryngeal dystonia in schizophrenia patients with antipsychotics.

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Aysegul Sari Cengiz Akkaya*

Uludag University Medical Faculty, Psychiatry Department, Turkey *Corresponding author. Uludag Universitesi Tip Fakultesi, Psikiyatri Anabilim Dali, 16059 Gorukle, Bursa, Turkey. Tel.: +90 224 2951821, +90 532 2576480 (mobile); fax: +90 224 4425897. *E-mail address*: cakkaya@uludag.edu.tr.

Ozlem Taskapilioglu Sevda Erer Ibrahim Bora Uludag University Medical Faculty, Neurology Department, Turkey

9 January 2008