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A cocaine-associated quadriplegia and motor aphasia after first use of cocaine

Kwadriplegia i afazja motoryczna spowodowana jednorazowym użyciem kokainy

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A 31-year-old female who have snorted one "line" of cocaine hydrochloride (approximately 35 mg), for the first time in her life, was admitted to the hospital because of acute onset of right hemiplegia and left hemiparesis evolving into quadriplegia. Motor aphasia, right eye-ball divergent strabismus and right mouth recess lowering were also observed. Conclusions: A first time mucosal administration of cocaine hydrochloride even in low dose can cause severe neurological complications like quadriplegia and aphasia. Cocaine-associated stroke can be a diagnostic problem in the emergency room. Unconscious patients or those with acute onset of neurological disorders can form a real diagnostic challenge, especially when there is no evidence of previous drug taking.

Chora lat 31 została przyjęta do Kliniki z powodu prawostronnej hemiplegii, lewostronnej hemiparezy, która w trakcie obserwacji ewoluowała do kwadriplegii. Powyższe objawy pojawiły się wkrótce po wziewnym przyjęciu przez pacjentkę jednej "linijki" kokainy (ok. 35 mg). Dodatkowo obserwowano także afazję motoryczną, zez, opadanie kącika ust po stronie prawej. Wnioski: Nawet jednorazowe przyjęcie kokainy, w stosunkowo niewielkiej dawce, może powodować poważne objawy neurologiczne, takie jak kwadriplegia i afazja. Udar spowodowany przyjęciem kokainy może okazać się dużym problemem diagnostycznym dla lekarzy oddziałów ratunkowych.

Introduction

Cocaine is one of the most dangerous illicit drugs in common use today and neurological symptoms are the most common manifestations of cocaine toxicity [1].

The use of cocaine is a strong risk factor for stroke in young women, specially in chronic cocaine users [2]. This case report points that cocaine toxicity with severe neurological complications can occur even after first use of a low dose of cocaine and implicate important socioeconomical consequences due to diagnostic problems, prolonged hospitalisation, and disability.

Case report

A 31-year-old female patient, with a history of occasional alcohol drinking and no previous drug taking, was admitted to the hospital because of acute onset of a right hemiplegia and left hemiparesis evolving into quadriplegia. Motor aphasia, right eye-ball divergent strabismus and right mouth recess lowering were also observed at the same time in the neurological examination. The female had no previous health problems, however, she used to smoke 20-30 cigarettes per day for the last 10 years. According to the anamnesis about seven hours prior to the admission the woman snorted, for the first time in her life, one "line" (approximately 35 mg) of cocaine hydrochloride, and drank about 500 ml of vodka (40% vol.).

At the admission to the hospital the patient was unconscious, with acute respiratory failure what required intubation and respiratory support (TV 700 ml, f 12, FiO₂ 40%, PEEP 5 cm H₂O), and was maintained during following nine days. Vital signs were as follows: temperature 37,4°C, blood pressure 150/90 mmHg, heart rate 100 beats/minute. The cardiac, abdominal and skin ex-

aminations were unremarkable. The lungs were almost clear to auscultation with single crackles bilaterally. There were no significant abnormalities in basic biochemical tests results. The analysis of the urine for cocaine was positive and serum alcohol level was 3,0 g/l.

On the next day after the admission the neurological status of the patient worsened despite of the antithrombotic and antioedemic treatment and quadriplegia was diagnosed.

A magnetic resonance imaging (MRI) was performed in SE, TSE and Flair sequence. T1-, T2- and PD-weighted scans as well as the scans with contrast media showed thickened pons with focus localised in his central part on the left side, about 20 mm in diameter, referring to ischemic change.

After 17 days of hospitalisation the patient was moved to a neurological ward and continued her rehabilitation returning to the status of right hemiplegia and left hemiparesis with still present motor aphasia, right divergent strabismus and right mouth recess lowering. Due to physical therapy and pharmacological treatment the patient slowly and systematically improved movements of the left side of the body and was discharged after next 18 days for further ambulatory rehabilitation.

Discussion

The most hazardous cocaine toxicity enfold cardiovascular and neurological events [1,3]. The first article about possible connection between chronic cocaine abuse and stroke was met with scepticism, however, later publications revealed epidemic proportions of chronic cocaine ingestion and stroke [4].

According to the best of our knowledge there were no articles about first time cocaine use complicated by stroke.

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Stroke in young cocaine abusers has been related to mechanisms different to those found in older individuals [5]. The pharmacologically induced vasospasm, impaired hemostasis and platelet function, decreased cerebral blood flow, abnormalities in the expression of transcription factors and changes of brain neurotransmitter systems were considered as the etiology of cerebrovascular accidents, however, the exact mechanism is still unclear [1,4,6]. Moreover the cocaine-associated stroke depends, in part, on the form of cocaine. Some investigations state that majority of neurovascular events were related to crack cocaine use. No first-time cocaine users were identified in these researches [7]. Others show that after alkaloidal cocaine use ischemic and hemorrhagic strokes are equally likely, whereas cocaine hydrochloride is more likely to cause hemorrhagic strokes in the sniffers. This regularity was also true when alkaloidal cocaine users were compared with intravenous and intramuscular cocaine hydrochloride abusers [8].

In this case report, the left pontine region was affected after the first time use of a low dose of cocaine hydrochloride. Left-sided changes localisation in females with

cocaine-associated strokes was noted also by the other authors [9]. Although hypoperfusion occurred throughout the brain, the left hemispheric dopamine-rich sublobar region was the most severely affected. Cocaine-induced cerebral hypoperfusion is associated with the time course of its pharmacological effects, and dopamine-rich areas, particularly in the left hemisphere, may be most vulnerable. Increasingly larger doses of cocaine may be associated with greater risk for ischemic stroke [6].

Taking into consideration complexity of cocaine toxicity, patients with acute onset of neurological disorders and no evidence of previous drug taking, can form a real diagnostic challenge in the emergency room [5].

Conclusions

1. A first time mucosal administration of cocaine hydrochloride even in low dose can cause severe neurological complications like quadriplegia and aphasia.

2. Cocaine-associated stroke can be a diagnostic problem in the emergency room. Unconscious patients or those with acute onset of neurological disorders can form a real diagnostic challenge, especially when there is no evidence of previous drug taking.

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