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CLINICAL INFORMATION

Seizure due to multiple drugs intoxication: a case report

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KEYWORDS
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Abstract The mechanism of the antidepressant effect of bupropion is not fully understood. Besides, using it in the treatment of depression, it is found to be effective in reducing withdrawal symptoms due to smoking cessation. A 28-year-old female patient with a history of depression was admitted to emergency department an hour after ingestion of bupropion, quetiapine, and levothyroxine in high doses to commit suicide. While accepting her into the Intensive Care Unit, she was awake, alert, disoriented and agitated. After 2 h, the patient had a generalized tonic–clonic seizure. The necessary treatment was given and 9 h later with hemodynamic improvement, the patients' mental status improved.

Bupropion may cause unusual behaviors such as delusions, paranoia, hallucinations, or confusion. The risk of seizure is strongly dose-dependent. We want to emphasize the importance of early gastric lavage and administration of activated charcoal.

PALAVRAS-CHAVE
Bupropiona;
Unidade de terapia intensiva;
Convulsão

Convulsão por causa de intoxicação por múltiplas drogas: relato de caso

Resumo O mecanismo do efeito antidepressivo de bupropiona ainda não está bem esclarecido. Contudo, seu uso no tratamento de depressão revelou ser eficaz para reduzir os sintomas de abstinência relacionados à cessação do tabagismo. Uma paciente do sexo feminino, 28 anos, com história de depressão, deu entrada no setor de emergência uma hora após a ingestão de bupropiona, quetiapina e levotiroxina em doses elevadas para cometer suicídio. Ao ser internada em unidade de terapia intensiva, estava acordada, alerta, desorientada e agitada. Após duas horas, apresentou uma crise tônico-clônica generalizada. O tratamento necessário foi administrado e nove horas mais tarde, com a estabilização hemodinâmica, o estado mental da paciente melhorou.

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Bupropiona pode causar comportamentos incomuns, incluindo delírios, paranoia, alucinações ou confusão mental. O risco de convulsão é altamente dependente da dose. Queremos enfatizar a importância da lavagem gástrica precoce e da administração de carvão ativado.

Introduction

The mechanism of the antidepressant effect of bupropion is not fully understood. Bupropion is a monocyclic antidepressant and has a similar structure to amphetamine. It is not only an inhibitor of dopamine, noradrenaline and serotonin re-uptake but also an antogonist of nicotine receptors.[1] Also it regulates anticholinergic activity. Besides using it in the treatment of depression, it is very much effective in reducing withdrawal symptoms due to smoking cessation.[2] Bupropion has also been used to treat attention-deficit/hyperactivity disorder (ADHD) but has not received FDA approval for this indication.

Case

A 28-year-old female patient with a history of depression was admitted to emergency department (ED) an hour after ingestion of 5.4 g bupropion, 250 mg quetiapine, 1.4 mg levothyroxine. These drugs were taken by the patient with the intension of committing suicide. Gastric lavage was performed and activated charcoal was administered in the ED. There is no considerable finding in her medical history. When she was admitted into the Intensive Care Unit (ICU), she was awake, alert, disoriented and agitated. The observations: GCS 13/15, normotensive (116/79 mmHg), tachycardia (120 beats per minute), afebrile (36 °C), normoglycemic (104 mg/dL). Blood gases report was pH: 7.35, PCO_2: 13.8 mmHg, PO_2: 144 mmHg, BE: −22 and HCO_3: 7.7 mEq/L $NaHCO_3$ infusion was started. After 2 h, the patient had a generalized tonic–clonic seizure and 2 mg midazolom was administered.

Shallow breathing, hypotension (83/44 mmHg) and bradycardia were detected in this patient. Then she was intubated with 75 mg ketamine and 6 mg vecuronium. We used ketamine to avoid deepening the hypotension despite the seizures. For hypotension 500 mL colloid and 10 μg/kg/min dopamine infusion were started. The patient was consulted to internist because of levothyroxine. The doctor suggested to start to prednisolone and propranalol when TSH went below 0.1 mIU/L.

Nine hours later with hemodynamic improvement, the patients mental status improved and she self-extubated. The patient's hemodynamic parameters remained stable and no abnormality was detected in biochemical examination. She was discharged home after psychiatry examination a few days later.

Discussion

Bupropion was first developed in 1989 as an antidepressant for the treatment of major depressive disorder. In 1997 it became licensed as an aid to smoking cessation. In smoking cessation it is believed to act by increasing dopamine concentration in the nucleus accumbens.[1,3,4] Therapeutic peak plasma values are reached within 3 h of ingestion with a mean elimination half life of 21 h; bupropion is extensively metabolized by multiple pathways with no single pathway predominating.[1]

Bupropion may cause unusual behaviours such as delusions, paranoia, hallucinations, or confusion. In addition, anticholinergic effects, such as mydriasis, tachycardia, are rarely seen. The risk of seizure is strongly dose-dependent, Seizure was observed in 21% of cases, 14 h after high-dose ingestion.[5] At 10 g or higher doses ingestion, cardiac arrest and rare cases of death have been reported.[6] There is no antidote, and supportive care is the mainstay of further treatment for intoxication.[7] In our case, bradycardia and hypotension developed after extensive convulsions, respiratory distress occurred and she was intubated on that. Activated charcoal and gastric lavage can be applied to decrease absorption of bupropion if the patient presents for treatment soon after the overdose first hours activated charcoal.[8] We want to emphasize the importance of early gastric lavage and administration of activated charcoal.

Changes in ECG generally improves self in, but adenosine has also been used. Tachycardia was present in our patient, her heart rate was 120–135 beat/min and it resolved without treatment.

Our patient had ingested 250 mg of quetiapine. This dose was below the toxic dose of this drug (4.5 g). But hypotension, respiratory depression, and convulsions the side effects of this drug were seen. As the dosage of quetiapine was not toxic, we thought that these are common side effects of bupropion and quetiapine.

The fundamental of treatment for bupropion, quetiapine, and levotroxin overdose is supportive care. The patient was discharged on fifth day with supportive therapy.

Conflicts of interest

The authors declare no conflicts of interest.

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