

## Early Hemodialysis Administered Baclofen Intoxication: Case Report

Erken Hemodiyaliz Uygulanan Baklofen Entoksikasyonu: Olgu Sunumu  
Acil Tıp

Başvuru: 08.03.2015  
Kabul: 26.05.2015  
Yayın: 15.06.2015

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### Özet

Baclofen kas spastisitesini tedavi etmek için kullanılan presinaptik gama-aminobutirik asit (GABA) agonistidir. Baclofen'in aşırı dozu merkezi sinir sistemi, solunum sistemi ve kardiyovasküler sistem depresyonuna neden olabilir. Bu yazıda, özkiyim amaçlı yüksek doz baclofen alan 19 yaşındaki bayan olgu sunulmaktadır. Erken hemodiyaliz planlandı ve uygulandı. Baclofen yüksek dozlarda beyin ölümünü taklit edebilir. Dikkatli klinik değerlendirme ve anamnez önemlidir.

**Anahtar kelimeler:** *Baclofen, İntoksikasyon Hemodiyaliz*

### Abstract

Baclofen is a presynaptic gamma-aminobutyric acid (GABA) agonist used to treat muscle spasticity. Overdoses of baclofen can cause central nervous system, respiratory system, cardiovascular system depression. We reported a 19-year-old, female with baclofen overdose for suicide attempt. Early hemodialysis was immediately planned and implemented. High doses of baclofen can mimicks brain death. It is important to be careful clinic evalutaion and case history.

**Keywords:** *Baclofen, Intoxication Hemodialysis*

### Introduction

Baclofen is a presynaptic gamma-aminobutyric acid (GABA) agonist used to treat muscle spasticity. Although its exact mechanism is not fully understood, it acts at the spinal level by reducing the tonic activity of spinal gamma motor neurons<sup>1,2,3,4</sup>. Usual therapeutic doses are 15-60 mg per day. The recommended maximum dose is 80 mg per day in adults; 60 mg per day in children ≥8 years old. Side effects of baclofen at usual doses include sedation, confusion, diarrhea, convulsions, drowsiness, headache, dizziness and occasionally orthostatic hypotension<sup>3</sup>. Overdoses are associated with tachycardia, bradycardia, hypothermia, impaired consciousness, muscle weakness, hypotonia, areflexia, somnolence, coma, seizures, myoclonus, miotic or mydriatic pupils and respiratory failure lasting up to 72 hours<sup>1,2,3,4</sup>. We report the effectiveness of hemodialysis in a patient with baclofen overdose admitted to emergency department with suicide attempt.

### Case Report

A 19-year-old, 50-kg female was brought to emergency department after she was found her consciousness tend to fall asleep. Her medical history was not significant. She had attempted suicide by taking 60 pills of baclofen (10 mg/tablet) and 16 pills of diclofenac potassium (50 mg/tablet). On admission her Glasgow Coma Scale score was E<sub>3</sub>M<sub>5</sub>V<sub>4</sub> Physical examination revealed consciousness tend to fall asleep, closed eyes. Her pupils were midriatic and responsive to light, had nystagmus. Her extremities were flaccid. The deep tendon reflexes were absent. Laboratory findings were normal. Primarily supportive care (activated charcoal, intravenous fluids) was started. She was consulted by nephrologists and hemodialysis was planned. She was transferred to intensive care unit (ICU) after 2 hours admitted to emergency department. Her blood pressure was 130/90 mmHg, with regular heart rate of 104/min and respiratory rate of 25 shallow breaths/min, temperature 36.6°C and oxygen saturation 97% in

room air. The results of repeat laboratory studies in ICU were within the reference range. She had a single 4-hour session of hemodialysis at the intensive care unit after half an hour admitted to ICU. After 2 days she was discharged to internal medicine department.

## Discussion

In our case, the patient was not appeared to present in the classic manner associated with baclofen overdose. The amount of baclofen the patient had ingested was 600 mg. This amount is regarded in some studies as the limit value for serious toxic events.

In our case, she was recognized early after the suicide attempt (approximately an a hour), was brought to the emergency department. The family stated that she had a suicide attempt with baclofen. Therefore, early hemodialysis was immediately planned and implemented.

The pharmacokinetics of baclofen at therapeutic doses has been well studied<sup>3</sup>. It is rapidly absorbed from the gastrointestinal tract, blood levels peak within two hours<sup>2,3</sup>. It is 30% plasma protein-bound<sup>3</sup>. Elimination half-life after therapeutic use follows first-order kinetics, with half-life ranging from 2 to 6 hours<sup>2,3</sup>, means 3.5 hours<sup>3</sup>. Eighty -five percent is excreted unchanged in the urine and the remaining 15% is deaminated to  $\beta$ -(p-chlorophenyl)-gama-hydroxybutyric acid in the liver and excreted in the stool<sup>3</sup>. Usual therapeutic doses are 15-60 mg per day. The recommended maximum dose is 80 mg per day in adults; 60 mg per day in children  $\geq$ 8 years old<sup>3</sup>. Signs of toxicity have been reported after ingestion of as little as 100 mg baclofen<sup>2,3</sup>.

Baclofen toxicity create a profound central nervous system depression<sup>4,5</sup>. There is no clinically available antidot for baclofen intoxication although a weakly potent antagonist "Phaclofen" has been developed for experimental use<sup>4</sup>. Management of baclofen overdose is primarily supportive care<sup>1,3</sup>. Activated charcoal, intravenous fluids, inotropes and mechanic ventilation if necessary<sup>1,3,4,5</sup>. In the event of seizures diazepam, phenytoin and physostigmine were recommended<sup>3,4</sup>.

Hemodialysis provides fast and effective treatment<sup>3</sup>.

Geoffrey et al<sup>1</sup> reported an unsuspected baclofen overdose who presented seizures, non responsive to verbal stimule and manifested decerebrate posture upon deep pain stimuli. Chong et al<sup>2</sup> reported a case of baclofen overdose (150 mg) who presented rhabdomyolysis and acute delirium. There is no patient described previously in the literature presented with these symptoms. The mechanism for rabdomyolysis in this case is uncertain. Bildik et<sup>3</sup> reported a baclofen overdose (200 mg) who intubated, ventilated and transferred to intensive care unit. Over two days, she was extubated and revealed she had taken baclofen tablets with suicide intention. Cooper et al<sup>4</sup> reported cystic medial necrosis which was previously unreported toxic effect of massive baclofen overdose.

In our case, she was admitted to emergency department approximately after an a hour after the suicide attempt and her family stated that she had a suicide attempt with baclofen.

We know that our patients received baclofen and we know that the hemodialysis may be an option for

baclofen overdose. She was consulted by by nephrologists and hemodialysis was planned. Symptomatic and supportive care were continued until hemodialysis started.

Most patients recover with supportive care alone<sup>3</sup> because they revealed their suicide attempt with baclofen when

they are extubed. If baclofen intoxication suspected initially and early hemodialysis applied, there will be no need for mechanical ventilation and longer intensive care treatment. It was reported that patients were treated with long periods although they received lower doses of baclofen.

Although our patient received high dose of baclofen, supportive therapy started and the drug is quickly removed by hemodialysis as soon as possible. The cases reported in the literature had lower doses than our patient but they revealed their suicide attempt with baclofen when they are extubed or with autopsy report.

### **Conclusion:**

Baclofen is not routinely detected in urine toxicology screens. Clinicians should suspect baclofen overdose in patients with a history of muscle spasms or chronic low back pain. High doses of baclofen can mimic brain death. It is important to be careful in clinic evaluation and case history. The prognosis is good if full supportive care is administered properly. This case suggests that hemodialysis may be an option for baclofen overdose.

### **References**

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### **Information Presentation**

Presented as a poster at the 4th Eurasian Congress on Emergency Medicine, November, 2014, Antalya, Turkey.