

## Can a single dose of duloxetine induce hyponatremia in a young male patient?

Tek doz duloksetin genç erkek hastada hiponatremiye neden olabilir mi?

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### Abstract

We report a case of duloxetine-induced hyponatremia which developed rapidly with somatic symptoms in a middle-aged male after a single dose of medication. A 28-year-old male patient presented with fatigue and dizziness. The patient's presenting complaints completely resolved after duloxetine was ceased and normal saline treatment was given. When treating patients with duloxetine, close monitoring for hyponatremia is essential.

**Keywords:** Duloxetine, hyponatremia, young male patient, somatic symptoms.

### Öz

*Somatik semptomları olan orta yaşlı bir erkek hastada tek doz duloksetin tedavi sonrası hızlıca gelişen bir hiponatremi olgusunu rapor ettik. Yirmi sekiz yaşında erkek hasta halsizlik ve başdönmesi şikayeti ile başvurdu. Duloksetinin kesilmesi ve normal salin tedavisinden üç gün sonra tamamen normale döndü. Duloksetin ile tedavi edilen hastaların hiponatremi açısından yakın takiplerinin yapılması gereklidir.*

**Anahtar Sözcükler:** Duloksetin, hiponatremi, genç erkek hasta, somatik semptomlar.

### Introduction

Duloxetine hydrochloride is a dual reuptake inhibitor of both 5-hydroxytryptamine (5-HT) and norepinephrine (NE) receptors which lacks significant affinity for muscarinic, histamine H<sub>1</sub>, α<sub>1</sub>-adrenergic, dopamine and opioid receptors (1). Duloxetine is used for the treatment of major depressive disorder, diabetic neuropathy, fibromyalgia, generalized anxiety disorder, and chronic musculoskeletal pain. The most prominent side effects are dizziness, nausea, headache, paresthesia, vomiting, irritability, and nightmares (2). In addition, although rare, hyponatremia has been reported in patients taking duloxetine for depression and neuropathic pain (3,4).

Here we present a case of duloxetine-related hyponatremia which occurred following a single dose in a young male patient under treatment for somatization. Written informed consent was obtained from the patient for publishing his personal medical records.

The relation between the drug and possible side effects is reviewed via Naranjo's drug interaction probability scale (5). According to Naranjo's scale, the score of our case was 7 (probable adverse drug reaction).

### Case Report

A 28-year-old male patient presented to the emergency department with fatigue and dizziness. His past medical history revealed no diseases other than sporadic joint pain. The patient was not using any medication other than the duloxetine 30 mg he was prescribed one day earlier for his joint pain (diagnosed as somatization), and had taken only a single dose. His vitals were also within normal range and he was hemodynamically stable. Biochemical tests showed hyponatremia (126 mEq/L), other electrolyte levels were within normal range (Table 1). The patient had ordinary oral intake, with no salt or other dietary restriction, and no vomiting or diarrhea to cause fluid loss. There were no signs of other diseases that affect serum sodium level, such as sepsis, pancreatitis, or ileus. The patient's sodium level was within normal limits in tests performed three days earlier in the same hospital as part of the complete medical examination to determine the cause of his joint pain (Table-1). Since the physical examination of the patient, including neurological examination, was completely

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normal and his serum sodium level was above 120 mEq/L, the only treatment was cessation of duloxetine and administration of normal saline infusion, limited to 1000 mL/day. The patient was discharged symptom-free after 24 hours of follow-up in the emergency department. The patient's serum sodium level was normal when retested 7 days after discharge (138 mEq/L).

Written informed consent was obtained from the patient for publishing the individual medical records.

**Table 1.** Serial Laboratory Data in the Patient.

Serum	Duloxetine			
	Normal range	Three days before admission	One day after admission	Seven days after discharge
Sodium (mEq/L)	136-145	139	121	138
Potassium (mEq/L)	3.5-5.1	3.5	3.5	3.9
Glucose (mg/dmL)		85	125	
AST	5-34	25		
ALT	0-55	21		
BUN	9.0-22.0	11.6	4.5	
Creatinine (mg/dL)	0.6-1.25	0.78	0.79	
Osmolality (mOsm/L)	275-295	283	252	

AST: Aspartate aminotransferase; ALT: Alanine aminotransferase; BUN: Blood urea nitrogen

## Discussion

Hyponatremia is a significant entity due to its range of symptomatology from asymptomatic to mortal cases, mostly depending on the duration and speed of the change in sodium level (6). In our patient, hyponatremia emerged

following the intake of a single low dose of duloxetine. Since the patient had hypo-osmolar hyponatremia, it is reasonable to assume that the etiology of the hyponatremia is likely to be syndrome of inappropriate antidiuretic hormone (ADH) secretion (SIADH). Although some animal experiments suggest that norepinephrine and serotonin are stimulants of ADH secretion, the true mechanism of serotonin and norepinephrine reuptake inhibitor (SNRI)-related hyponatremia is yet unclear (7). Some authors suggest a multifactorial pathway including selective serotonin reuptake inhibitor (SSRI)-related increases in central and renal medullar ADH secretion and possible drug interactions as the etiology of SAIDH (8). Stovall et al. reported a 66-year-old female patient with duloxetine-associated hyponatremia presenting as altered mental status despite sodium replacement (Na 128 mEq/L) (4).

Our case presents a rare occurrence of duloxetine-induced hyponatremia, with some distinctive characteristics. First, the patient was a young male. Previous reports of duloxetine-induced hyponatremia have mostly been in elderly females (3,9,10). Second, the hyponatremia occurred following only single dose of duloxetine administration and developed more rapidly. Third, the patient had none of the risk factors for developing hyponatremia. The risk factors for hyponatremia include older age, female sex, history of hyponatremia, lower body mass index, use of thiazide diuretics, lower baseline serum sodium level (<138 mmol/L), and significant comorbidities (10).

Our report has some limitations. Urine sodium levels and osmolality were not tested in our patient. Since there was no information regarding a related comorbidity, thyroid gland function tests and cortisol levels were also not investigated.

In summary, emergency physicians should be aware of SSRI-induced hyponatremia and should be encouraged to monitor serum sodium levels in both male and female patients of all ages who are under SSRI treatment and present with nonspecific symptoms.

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