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Psychogenic Polydipsia with Hyponatraemia: A Case Report

Psikojenik Polidipsiye Bağlı Hiponatremi: Olgu Sunumu

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ABSTRACT

Psychogenic polydipsia (PPD) is a rare condition that is characterised by polyuria and polydipsia. Polydipsia with hyponatraemia commonly occurs in chronic psychosis patients. In this case report, we present a 62 year old male patient who was admitted with impaired consciousness. He had been drinking more than 10 litres of water per day for four days.

Keywords: Psychogenic polydipsia, hyponatraemia, emergency department
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ÖZET

Psikojenik polidipsi (PPD) poliüri ve polidipsi ile karakterize nadir görülen bir durumdur. Hiponatremi ile ilişkili polidipsi sıklıkla kronik psikoz hastalarında görülür. Biz bu makalede son dört gün içinde günlük 10 litreden daha fazla su içerek acil servise bilinç bozukluğu yakınmasıyla başvuran 62 yaşında erkek hastayı sunduk.

Anahtar Kelimeler: Psikojenik polidipsi, hiponatremi, acil sevis
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Introduction

Psychogenic polydipsia (PPD) is a rare condition that is characterised by polyuria and polydipsia (1). Polydipsia with hyponatraemia commonly occurs in chronic psychosis patients (1, 2). Delirium and behavioural changes may be observed in acute hyponatraemic patients, which may mimic psychomotor retardation or agitation (3). Hypotonic encaephalopathy may progress to headache, nausea, vomiting, seizures, confusion, lethargy and coma, along with respiratory arrest (3-5). In this case report, we present a patient who has chronic schizophrenia with hyponatremia due to polydipsia.

Case Report

A 62 year old male patient was admitted with impaired consciousness. From the patient's history over 22 years of follow-up, it was established that he had taken olanzapine for the treatment of schizophrenia. The patient had been drinking more than 10 litres of water per day for four days. On physical examination, his blood pressure, temperature and respiratory rate were 150/90 mm Hg, 36.5°C and 14 breaths/min, respectively. His laboratory findings were as follows: haemoglobin 15.2 g/dL, leukocytes 15300 cells/mm^3, haematocrit 46.1%, and platelets 323000 per mm^3. At that time, serum electrolytes were as follows: sodium 115 mmol/L, potassium 4.1 mmol/L, chloride 92 mmol/L, antidiuretic hormone (ADH) 6.2 pg/mL, plasma osmolarity 241 mOsm/L, urine osmolarity 180 mOsm/L, and urine density 1005. Renal and liver screening tests, cardiac enzymes (creatine phosphokinase and troponin I) and brain computed tomography were normal.

Hyponatraemia due to psychogenic polydipsia was diagnosed and treatment started. Treatment was initiated with normal saline at a rate of 2000 cc per day, while oral fluids were restricted to 1 litre per day. After three days of treatment his symptoms showed significant improvement. The patient's symptoms recovered and on the third day, laboratory values were as follows: sodium 134 mmol/L, potassium 4.2 mmol/L, chloride 101 mmol/L, plasma osmolarity 284 mOsm/L, urine osmolarity 640 mOsm/L, and urine density 1016 (Table 1). The patient was discharged with the recommendation to contact the psychiatric department.

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Table 1. Laboratory parameters

		1st day	3rd day
Na	(132-146 mEq/L)	115	134
Cl	(99-109 mEq/L)	80	101
Glucose	(70-100 mg/dL)	114	118
Urea	(19-48 mg/dL)	15	26
Urine density	(1010-1025)	1005	1016
Plasma osmolarity	(275-295 mOsm/L)	241	284
Urine osmolarity	(300-1000 mOsm/L)	180	640
ADH	(0-8 pg/mL)	6.2	

Na: Sodium, Cl: Chloride, ADH: Anti-diuretic hormone

Discussion

Psychogenic polydipsia occurs in 6% to 20% of psychiatric patients and in 25% of the subgroup of patients with schizophrenia (1, 3). In addition, other psychotic conditions, psychotic depression, manic depressive psychosis, personality disorders, autism, and mental retardation have also been described in cases of dementia (3, 6, 7). A significant PPD may even occur in people who have had no previous psychiatric illness (7). In this case, the patient had undergone schizophrenia therapy for 22 years.

A well-defined table of clearly understood pathophysiology exists (8). However, the situation is complex and multifactorial; malfunction of the hypothalamic thirst centre is seen as a likely cause (1, 9). PPD is most likely to occur as a result of chronic intake of excess fluid, changing the feedback regulation of the hypothalamic-pituitary axis (9). Inappropriate ADH secretion may also occur in many patients with PPD (10). This may be due to the use of psychiatric drugs. In addition, dopamine hypersensitivity has been reported to be effective in the table (9). Furthermore, atrial natriuretic peptide (ANP) secreted during stress inhibits the intrahypothalamic secretion of vasopressin. In addition, in the absence of the removal of the inhibitory effect on dipsogenic polypeptide angiotensin-2 control of ANP stimulation by serotonin use causes polydipsia (11).

Fluid restriction is sufficient for the treatment of PPD in most cases. In severe cases, however, hypertonic saline solution is recommended in an emergency (1, 3). Clonidine and enalapril are reported to have beneficial effects in terms of serum sodium levels and urine output (12). There are also studies of lithium for preventing demeklosiclyn polydipsia (1, 3). In addition, clozapine, low-dose risperidone and propranolol are proposed therapies, as they are said to be beneficial in preventing the development of pulmonary congestion of furosemide (1, 3, 4, 8, 13). Fluid restriction was sufficient for us to have offered these to our patients. In our case, fluid restriction and treatment with 20 mg olanzapine was continued. Hypertonic saline solution was not given. In our case increased plasma and urine osmolarity was observed on the third day of follow up. Request thirst disappeared.

Conclusion

Polyuria, polydipsia and hyponatraemia may occur in patients with psychiatric disorders which can cause morbidity and mortality in severe clinical manifestations such as encaephalopathy. Therefore, psychiatric emergency department patients with primary disease symptoms should be questioned and polydipsia and electrolyte imbalances should be ruled out before treatment is continued.

Conflict of interest

No conflict of interest was declared by the authors.

References

1. Dundas B, Harris M, Narasimhan M. Psychogenic polydipsia review: etiology, differential, and treatment. Curr Psychiatry Rep 2007; 9: 236-41. [Crossref]
2. Gaigalat TK, Bopp FT, Zinkler M. Fatal aspiration following polydipsia in schizophrenia. Psychiatr Prax 2011; 38: 352-4. [Crossref]
3. Siegel AJ. Hyponatremia in psychiatric patients: update on evaluation and management. Harv Rev Psychiatry 2008; 16: 13-24. [Crossref]
4. Verghese C, De Leon J, Josıassen RC. Problems and progress in the diagnosis and treatment of polydipsia and hyponatremia. Schizophr Bull 1996; 22: 455-64. [Crossref]
5. Illowsky BP, Kirch DG. Polydipsia and hyponatremia in psychiatric patients. Am J Psychiatry 1988; 145: 675-83.
6. Bremner AJ, Regan A. Intoxicated by water. Polydipsia and water intoxication in a mental handicap hospital. Br J Psychiatry 1991; 158: 244-50. [Crossref]
7. Mercier-Guidez E, Verrier A, Smail A. Psychogenic Polydipsia. German Journal of Psychiatry 1999; 2: 4950.
8. Rao N, Venkatasubramanian G, Korpade V, Behere R, Varambally S, Gangadhar B. Risperidone treatment for polydipsia and hyponatremia in schizophrenia: a case report. Turk Psikiyatri Derg 2011; 22: 123-5.
9. Kohli A, Verma S Jr Ii, Sharma A Jr I. Psychogenic Polydipsia. Indian J Psychiatry 2011; 53: 166-7. [Crossref]
10. Singh S, Padi MH, Bullard H, Freeman H. Water intoxication in Psychiatric Patients. Br J Psychiatry 1985; 146: 127-31. [Crossref]
11. Özgün F, Ertemir M, Ceylan ME, Demir Ç. Stres ve Polidipsi. Klinik Psikofarmakoloji Bülteni 2002; 12: 86-8.
12. Greendyke RM, Bernhardt AJ, Tasbas HE, Lewandowski KS. Polydipsia in chronic psychiatric patients: therapeutic trials of clonidine and enalapril. Neuropsychopharmacology 1998; 18: 272-81. [Crossref]
13. Moritz ML, Ayus JC. The pathophysiology and treatment of hyponatremic encephalopathy: An update. Nephrol Dial Transplant 2003; 18: 2486-91. [Crossref]