

## CASE REPORT

# Psychogenic Polydipsia Leading to Hyponatremia Induced Seizure in Schizophrenia

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## Abstract

Psychogenic Polydipsia is a rare clinical disorder characterized by excessive thirst leads compulsive water drinking in the absence of physiologic stimuli to drink. It is common problem in chronic mental illness, particularly schizophrenia. Compulsive water drinking can lead hyponatremia causing symptoms such as vomiting, seizure, coma, and if not treated properly can lead to fatal consequences. Fluid restriction and psycho-education to behavioral modification therapy involving family members can be a very effective strategy for managing such cases. Here we present a case of chronic schizophrenia developed hyponatremia due to excessive water drinking and leads to seizure and coma.

**Keywords:** Psychogenic Polydipsia, Hyponatremia, Seizure

## INTRODUCTION

Psychogenic polydipsia (PPD) also called primary polydipsia is a disorder characterized by excessive thirst and compulsive water drinking (1). In psychiatric patients, psychogenic polydipsia and the syndrome of inappropriate antidiuretic hormone secretion may cause hyponatremia. Primary symptoms of hyponatremia are drowsiness, restlessness, myoclonic jerks and generalized convulsions and it leads coma and death if not treated properly, it occurs in indoor settings or outpatient psychiatric patients (2). Clinical picture PPD seen 6 to 20 percent of psychiatric patient mainly schizophrenia, where patients are having sensation of excessive thirst and compulsive drinking, without a clear underlying pathophysiology (3,4) lead to over-hydration, resulting in disruption of fluid and electrolyte balance with potentially fatal consequences (5).

PPD frequently reported among psychiatric patients 80 percent with diagnosis of schizophrenia with long-term hospitalization (6), also seen in patients with diagnosis of mental retardation, bipolar disorder, alcohol dependence, eating disorders, and organic mental disorder (7,8). Around 20 percent of these patients experience life-threatening hyponatremia such as water intoxication; it may manifest itself by a worsening of psychiatric symptoms, nausea, vomiting, delirium, ataxia, seizures, and coma, and may even be fatal (9). Its etiology is unknown, but it is thought that antidiuretic hormone (ADH) is increased by non-osmotic stimuli and it is also believed that anticholinergic side effects of antipsychotic drugs aggravate the PP (10).

It is a challenge for psychiatrist to diagnose and manage the condition as patients themselves do not reveal and deny or limited insight and lack of responsiveness to verbal redirections. Apart from pharmacological treatment, the behavioral modification has been widely used and water restriction program (3,11) should be conducted with the help of family member. Daily monitoring of the input, output, and electrolytes imbalance should be corrected. Some literature described the various methods to treat psychogenic polydipsia, medications such as demeclocycline,

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captopril, propranolol, and naloxone has shown inconsistent results (3). Also, atypical antipsychotics such as risperidone and quetiapine have shown mixed results (11,12). It has been reported in the literature that clozapine is also effective in reducing water intake (13), and that vasopressin type 2 antagonists which are primarily used to treat heart failure are also effective in rapidly reversing and preventing further cases of water intoxication (14).

## CASE

A 49 years old male patient at our chronic rehabilitation ward with average body built. Our staff nurse found that patient has history of one episodes of seizure and he fell down from his bed with altered level of consciousness. He was referred to multi-specialty hospital and admitted at intensive care unit with supportive management and relevant investigations were done. All investigations were within normal limit but we found his sodium level was 110 mmol/L. In urine analysis urine osmolality level was low 110 mmol/Kg. No abnormality in renal function test seen. Computerized tomography was normal. Staff nurse reported that patient used to drink water 6 to 7 liter per day and increased up to 8 to 9 liter per day. He had polyuria past 2 weeks. After complete investigations were done, all possible organic causes were excluded and he was diagnosed psychogenic polydipsia leads hyponatremia induced epilepsy.

Hypertonic saline was given to correct the electrolyte imbalance. Oral fluid restriction 1.5 liter per day was strictly followed even though he complained of intense thirst. Due to chances of developing acute brain edema patient was put one to one strict observation as he need verbal redirection. Sodium level becomes normal after 6 days but he was disturbed psychiatric point of view such as anger outburst, suspicious, fearful due to his antipsychotic was withhold. Patient is always trying to sneak to the bathroom to drink water. Risperidone was initiated 2mg per day slowly increased to 4mg per day and added quetiapine 100 mg for his sleep. After a week his sodium level was at the normal range and his psychotic features were improved. He was discharged after one week with normal sodium level and no active psychotic features with adequate water ingestion.

He is known case of chronic schizophrenia since 15 years for his aggressive behavior, suspiciousness, muttering to self, fearfulness and decreased sleep. On mental status examination we found he had marked apathy and blunting of emotional responses that resulted in social

withdrawal, poverty of thought, neglecting him-self and decrease his social performance. He was on risperidone 2mg twice daily along with injection risperidone consta long acting intra muscular every two weekly. Birth and developmental milestone achieved normal. There was no psychiatric history in his family. No history of medical and surgical intervention and no history of drug abuse were noted. Vitals sign and systemic examination were within normal limit.

## DISCUSSION

This patient was diagnosed psychogenic polydipsia secondary to schizophrenia leading to hyponatremia induced epilepsy due to fact that the purpose of excessive water drinking. Patient was tried multiple antipsychotics due to his psychosis and was maintained on risperidone, anticholinergic side effect such as dryness of mouth due to antipsychotics leads excessive water drinking 8 to 9 liter per day, later causes hyponatremia and worsen the symptoms and it leads seizure. In patient of psychosis elevated level of dopamine due to long term intake of neuroleptics may be stimulating thirst center and patient use to drink excessive water due to which hyponatremia occurs.

Excessive water drinking causes water intoxication and it leads worsening of psychosis, in our patient psychosis deteriorated such as abnormal mental status examination, confusion, violent behavior and hyponatremia, it leads epilepsy. Polydipsia patient with history of psychosis needs psychiatric evaluation. PPD associated with psychosis can be get fatal or life threatening outcome such as epilepsy, aspiration pneumonia, cerebral edema, rhabdomyolysis and death could be occurring due to self – induced water intoxication.

In our patient fatal condition is epileptic episode occurring even though no past history or no family history of epilepsy. This case report shows seizure as a complication of hyponatremia secondary to water intoxication. Psychiatrist should take care to proper diagnosis of such patient. Behavioral modification technique plays an important role, measures such as restriction of water intake, monitoring electrolytes and abnormality should be corrected particularly sodium level. PPD is relapsing course therefore psycho-education with family members is beneficial in psychiatric patient after discharge from hospital. In hospital setting need to assess water intake routinely in patient with chronic illness of psychosis. PPD is having life threatening consequences so it is important to highlight the proper diagnosis and manage the patient with water restriction program.

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