



## A Case of Polydipsia in a Psychiatric Patient

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### Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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### Case Report

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### ABSTRACT

A 28 year old male student, with a long standing history of psychotic disorder, presented with excessive water intake and symptom exacerbation with associated confusion, vomiting and irrational talk, that has started a week before. He drank about 20 L of water daily and had dyselectrolytaemia. He was admitted and managed as a case of Diabetes Insipidus with no improvement until after an inadvertent psychiatric evaluation and management when the correct diagnosis was made. This case is the first to be reported in this country and a learning point for psychogenic polydipsia.

**Keywords:** Polydipsia; schizophrenia; nephrogenic; diabetes; insipidus.

### 1. INTRODUCTION

Polydipsia is the consumption of an excessive amount of water, usually > 3l/day. Excessive water consumption may lead to overhydration, resulting in disruption of fluid and electrolyte balance with potentially fatal consequences [1]. Hence, appropriate evaluation and diagnosis is

crucial for the management as well as the avoidance of complications.

There are several causes of polyuria and polydipsia, including those of renal and neurologic origin, and polydipsia is a common presenting feature in diabetes mellitus and insipidus (DI), where water consumption is

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largely in response to increased thirst. DI could be central (neurogenic diabetes insipidus), where there is insufficient secretion of Antidiuretic Hormone (ADH) - the most common form of the disease, [2] or due to impaired renal tubular response to ADH(nephrogenic diabetes).

In primary polydipsia, there is an urge to drink without a clear "physiologically" driven thirst stimulus. It includes psychogenic polydipsia and non-psychogenic polydipsia. Psychogenic polydipsia is seen in psychiatric conditions, mainly schizophrenia, where patients may drink excessively, without a clear underlying pathophysiology [3,4]. Drinking is apparently compulsive, due to delusions regarding drinking or as a stereotyped behavior. Psychogenic polydipsia may present with thirst, headaches, weakness, confusion, vomiting and irritability, [5] and tonic-clonic seizures. These occur due to the disruption of fluid and electrolyte balance. Behavioral changes may include drinking water from any water source available [5]. Non-psychogenic polydipsia, may be due to a hypothalamic lesion, psychotropic medications or be idiopathic. Clinical correlates of this behavior have been described in the past, [6] but never before in Nigeria.

A case of polydipsia occurring in a patient with a psychotic disorder who was misdiagnosed as a case of nephrogenic diabetes insipidus, and the psychiatric management's outcome is reported.

## 2. PRESENTATION OF THE CASE

Mr. PDG was a 28-year-old single student, who was admitted at a tertiary (university teaching) hospital in Nigeria with a week-long history of confusion, vomiting and irrational talk. He drank about 20 litres of water daily and vomited after taking large bouts of water. His water drinking behavior dated back 3 years, but had exacerbated a week prior to hospital visit. He passed urine at 10-15 minutes' intervals, but the quantity could not be ascertained. He claimed he drank water to quench his thirst and did not see anything wrong with his drinking habit.

His past medical history was nil of note, except for a non-specified mental illness for which he had been treated with risperidone and sertraline. He had been given medication for typhoid and malaria to treat the excessive water intake without improvement. There was no family history of similar behavior.

At examination he was fully conscious and kept holding a bottle of water from which he drank intermittently. He had urethral catheter in situ draining clear urine. He was admitted as a case of Diabetes Insipidus, to exclude Nephrogenic type, and placed on IV saline every 6h and Diazepam 10 mg IM.

His weight was 52 kg, and was well hydrated, not pale and anicteric. Vital signs and systemic examination were within normal. Hemogram was normal and biochemistry revealed hyponatremia, hypokalemia, elevated creatinine (130) and low BUN (2.4). After the endocrinologist assessment, his diagnosis was changed to Primary Diabetes Insipidus.

On the 5<sup>th</sup> day creatinine clearance was low (53 ml/min), but the abdomino-pelvic ultrasound scan was normal. Oral chlorpromazine 200 mg/day and IV Ceftriaxone 2 g/day was initiated, but no reason was given.

His condition did not improve and by the 8<sup>th</sup> day he refused eating on the ground that he had no appetite, but kept on gulping water. His water input record was rather erratic, but his daily urine output ranged from 7-12 liters per day. Blood biochemistry remained similar. The plan was then to continue adequate fluid intake, record of fluid input/output, change of antibiotics to Amoxiclav 625 mg twice a day, Risperidone 2 mg/day and Sertraline 50 mg/day. Water deprivation test was outlined.

On the 10<sup>th</sup> day, he violently attacked 2 nurses and physically assaulted his mother. He was sedated and Desmopressin was ordered. He was discharged as soon as he was out of sedation to see a psychiatrist on account of his aggression.

Psychiatric evaluation confirmed a 5 year history of progressive illness characterized by social withdrawal, deterioration in self-care and academic performance, and auditory hallucinations. He claimed to drink a lot of water to quench thirst. Treatment adherence for the previous 5 years was low and he did not attend psychiatric follow-ups.

His diagnosis was changed to schizophrenia with psychogenic polydipsia and was placed on Risperidone 2 mg/day. All other medications were discontinued including Chlorpromazine and Sertraline. He made progressive improvement, resuming his studies. Excessive water drinking

behavior had stopped at 8 months follow-up, and he recognized this to be abnormal.

### 3. DISCUSSION

Although there have been reports of polydipsia and polyuria in patients with mental disorders, to the best of our knowledge, this is the first case to be reported in a Nigerian patient. About 6-20% of psychiatric patients may have psychogenic polydipsia, [6] to some degree. The earliest case report for polydipsia in a psychiatric patient was about 8 decades ago [7]. Documented cases are mostly in chronic schizophrenia, [5,6] but also in anorexia nervosa, [8] severe depression and bipolar disorder, [9] and mental retardation [10,11].

Our patient was referred for psychiatric evaluation only due to aggressive behavior and no clinical improvement.

In psychogenic polydipsia, patients tend to exhibit some features of DI, but with preserved pituitary and renal functions, [12] such as was the case of our patient. The water deprivation test and desmopressin challenge test are essential to distinguish central from nephrogenic diabetes insipidus. Copeptin, the C- terminus of AVP precursor currently holds strong diagnostic specificity for DI [12,13]. The water deprivation test was requested for our patient; however it was not been carried out before psychiatric referral.

Water intoxication from excessive drinking can lead to the worsening of psychiatric symptoms [10]. This may have led to the deterioration of our patient's mental state, with confusion and violent behavior. Therefore, in a polydipsic patient with a history of mental disorder, holistic assessment including psychiatric evaluation is necessary.

### 4. CONCLUSION

This is the first report of a misdiagnosed case of psychogenic polydipsia in our setting in Nigeria. Excessive water intake may lead to water intoxication, with potentially fatal consequences if inappropriately managed. Assessment of such cases should be done with comprehensive evaluation, including psychiatric assessment, allowing for a correct diagnosis to be reached, and the avoidance of unnecessary suffering and use of scarce resources.

### CONSENT

Written informed consent was obtained from the patient for the publication of this paper.

### ETHICAL APPROVAL

It is not applicable.

### COMPETING INTERESTS

Author has declared that no competing interests exist.

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