Psychogenic Polydipsia, Look and You Will Find It: A Quality Improvement Project

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Abstract

Polydipsia is defined broadly as the excessive intake of fluids. Clinical implications result when the kidneys cannot excrete the abundance of fluid resulting in water intoxication and subsequent manifestations in multiple organ systems. Psychiatric, neurological, gastrointestinal symptoms can result and range from nausea and vomiting to seizures, delirium and cerebral edema. Psychogenic polydipsia affects psychiatric patients disproportionately and schizophrenia, bipolar disorder, OCD, anxiety and depression have all been correlated with psychogenic polydipsia (Ahmadi and Goldman, 2020).

Proposed mechanisms include antipsychotic induced D2 Dopamine receptor blockade leading to increases in thirst through increased Angiotensin. Furthermore, it is hypothesized that chronic blockade of dopamine receptors increases sensitivity to Angiotensin II and thirst (Verghese et al, 1993).

Here we discuss common symptoms of psychogenic polydipsia, clinical consequences of sodium derangements and discuss the importance of screening for polydipsia, particularly in patients on antipsychotics. Our data collection is in progress but we hope to demonstrate the ease of implementing polydipsia screening during a routine psychiatric consult with the aim of improving patient care outcomes by diagnosing the condition.

This quality improvement project aims to implement a screening process for symptoms of psychogenic polydipsia in order to elucidate whether the condition is frequently missed or overlooked in psychiatric patients during hospitalization on the medical floor.

Background

Polydipsia is defined as the excessive intake of fluids coupled with excretion of dilute urine. While the mechanism behind polydipsia is not entirely understood, it is hypothesized that dysfunctions in dopaminergic and cholinergic systems lead to dysregulations in the thirst mechanism contained in the hypothalamus (Sailer, et al 2017). Psychogenic or primary polydipsia is a common condition, affecting 6-20% of all psychiatric patients (Erzin et al 2017). Symptoms include nausea, malaise, headache, and lethargy. However, left untreated, derangements in sodium may lead to obtundation, seizures, coma, respiratory arrest and even death. The etiologies of psychogenic polydipsia include adverse effects of psychotropic medications as well as acute exacerbations of chronic psychiatric disorders. Less acute and frequently missed symptoms of polydipsia include excessive thirst, forgetfulness, confusion, and gait abnormalities. In addition to potentially fatal complications, psychogenic polydipsia may worsen psychiatric symptoms or mimic psychotic symptoms complicating diagnosis and management of patients. **We noticed that though our CL service was consulted for the management of many patients with schizophrenia or on antipsychotic medication, the reason for consult was rarely for excessive water consumption.** We suspected that these cases may have been missed, being mistaken for medical complications or psychiatric decompensations. We designed this study in order to demonstrate that early detection provides diagnostic clarity and improves patient care outcomes.

Methods

In order to determine if psychogenic polydipsia is in fact underdiagnosed and affecting patient care outcomes at our institution, a screening questionnaire for subjective symptoms consistent with polydipsia is being administered to medically hospitalized patients with either a diagnosis of a psychotic disorder or patients managed with an antipsychotic. The questionnaire is being administered to patients whom the consultation psychiatry service is evaluating and meets the aforementioned requirements. After a detailed medical and psychiatric history is obtained at bedside, the participants' subjective report to the questionnaire is gathered. The intervention is being administered as a part of each routine psychiatric consult for the period of one month. We intend to use statistical analysis to examine the rates of patients screening positive for symptoms of polydipsia as compared to rates of polydipsia in a random month prior to the intervention. This quality improvement study will be implemented in order to determine whether cases of psychogenic polydipsia go undiagnosed during hospitalization. Relevant clinical and laboratory data is being obtained during patient interview and review of electronic medical records. We have also interviewed nurses and 1:1 sitters for collateral information though this will not be part of statistical analysis.

Figures

How much fluid do you drink in a typical day?	1 Very Little	2	3	4	5 Very Much
How much fluid would you like to drink in a typical day?	1 Very Little	2	3	4	5 Very Much
Why do you drink the amount of fluid that you do?					
Do you feel that drinking too much water can damage your health?	1 Very Little	2	3	4	5 Very Much
Have you had any physical problems due to your water drinking?	1 Very Little	2	3	4	5 Very Much
Has drinking water caused you to act or feel a different way?	1 Very Little	2	3	4	5 Very Much
Have you felt like cutting back on the amount of fluid that you drink?	1 Very Little	2	3	4	5 Very Much
Have you been able to cut back on the amount of fluid that you drink?	1 Very Little	2	3	4	5 Very Much
Why did you cut back?					
Why did you start again?					
What kind of fluid do you prefer?					

Figure 1. This screening tool we adapted from a prospective observational study for psychogenic polydipsia in the outpatient setting.

Results

Our research on psychogenic polydipsia on the medical floor is still on going. We first started our research by reviewing the consults received by our CL team during a one month period. We found that not a single consult was placed for the management of psychogenic polydipsia. This was shocking when we considered how often the service was consulted for the management of schizophrenia and how common this disorder was on our inpatient unit. We then began collecting data using our screening tool. So far, we have found that patients with schizophrenia or those taking antipsychotic medications do in fact endorse increased water consumption, medical and social consequences of increased water intake, and a lack of control over how much water they consume. What has been more astounding is that we noticed how many cups of water or other fluids present in the patients' rooms. We also began asking support staff for their observations. They also reported that their patients constantly asked for water or were observed going to the restroom to fill their cups or drinking from the sink. We will continue to gather data and compare these subjective reports against reason for hospitalization and lab values such as sodium level and urine osmolality.

Discussion

Polydipsia, defined as excessive water intake, is not routinely considered during psychiatric consultation despite the estimated prevalence in psychiatric patients. Undiagnosed, severe water intoxication can result in coma or death. We have even found case reports discussing hyponatremia-induced stress cardiomyopathy due to psychogenic polydipsia. Mild hyponatremia has been associated with falls, ataxia, fractures and cognitive deficits (Ahmadi and Goldman 2020). Furthermore, psychotic patients with psychogenic polydipsia may not describe their symptoms as thirst but rather describe them as a delusion. While the underlying mechanisms behind the disorder are not completely understood, common risk factors have been investigated and can guide clinicians including certain medications, female sex, history of psychosis and acute exacerbations of psychosis. Psychiatric patients and in particular, patients with schizophrenia are at highest risk for polydipsia (Sailer 2017). The reasons behind this are multifactorial but can be psychiatric or iatrogenic. Multiple antipsychotics have been implicated in polydipsia including Thiothixene, Haloperidol and Chlorpromazine (Reynolds et al, 2004). Additionally, psychiatric patients experience worse severity of symptoms and increased morbidity associated with psychogenic polydipsia (Sakuma et al, 2021). Furthermore, polydipsia carries a high recurrence rate and an increased risk of re-hospitalization. Symptoms of water intoxication may also appear similar to psychiatric exacerbations and result in inpatient psychiatric admissions where an inciting medication may be continued unwittingly.

Screening for psychogenic polydipsia is not currently considered the standard of care within a routine psychiatric consultation. However, it is a feasible and practical way to identify patients with symptoms suggestive of polydipsia. Even if derangements in sodium are not apparent and the patient is free of hyponatremic sequelae, patient education and behavioral therapy can be addressed as a component of the psychiatric consultation as well as physician education. Future interventions may be aimed at adopting a polydipsia screening protocol for all psychiatric consultations, educating members of the consultation liaison psychiatry service and other physicians on the importance of screening for polydipsia as well as creating educational materials aimed at physician education. In regards to the treatment of psychogenic polydipsia, we have found a wide range of fascinating case reports that have found success using different medications such as acetazolamide, bupropion, and clomipramine.

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