CLINICAL VIGNETTE

Acute Urinary Retention in an Older Psychiatric Patient

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Case Report

An 81-year-old male was admitted for worsening psychosis with schizophrenia. Past medical history includes chronic kidney disease, benign prostatic hyperplasia (BPH) with multiple prior psychiatric hospitalizations. His complex psychiatric history with poorly controlled schizophrenia, on several medications including depakote, olanzapine, pimavanserin and temazepam. He was followed closely by a psychiatrist who recently increased olanzapine to 10mg in the morning and 20mg at night for the worsening psychotic episodes. On hospital admission, he was found to have acute urinary retention. A foley catheter was placed with drainage of nearly one liter, with hope that he would eventually pass a voiding trial. Urology was consulted and advised keeping the foley in place, starting tamsulosin, and reassessing after the patient's acute psychiatric and medical issues were more stabilized. Despite multiple attempts, voiding trials were unsuccessful. After review of medical, urologic, neurologic and psychiatric causes of acute urine retention, the anticholinergic effects from high dose olanzapine was likely the culprit. Olanzapine was decreased and eventually switched to lurasidone with significant improvement in his symptoms.

This case of acute urinary retention was precipitated by the anticholinergic effects of high dose olanzapine. His underlying BPH likely increased his risk, but the effects were not noted until the psychotropic was added. Increasing attention to voiding function and other side effects is warranted especially when multiple psychiatric and agents are utilized.

Discussion

Antipsychotics are commonly used for the treatment of schizophrenia, psychotic disorders and dementia with behavioral disturbances. While extrapyramidal symptoms (EPS) are more commonly discussed side effects, there are also anticholinergic and anti-muscarinic effects which may not be as widely recognized.[1]

Two generations of antipsychotics currently exist: first-generation known as “typical” were developed in the 1950’s and second-generation also called “atypical” became available in the 1980’s.[1] Atypical antipsychotics vary in the blockade of dopamine, muscarinic, histaminic and adrenergic receptors. This may be clinically significant because older adults are more sensitive to the adverse effects from the blockade of dopamine and muscarinic receptors. Typical antipsychotics antagonize the dopamine type 2 (D2) receptors but increase the risk for severe extrapyramidal symptoms including tremor, slurred speech, akathisia, and tardive dyskinesia with prolonged use. Atypical antipsychotics have a lower affinity for the dopamine receptors, but greater affinity for serotonin receptors compared to first-generation drugs, resulting in a more favorable side effect profile.[2,3]

Although generally better tolerated with less EPS effects, second-generation antipsychotics can bind with the alpha-adrenergic and histamine receptors causing increased anticholinergic effects including dry mouth, constipation and urinary retention.[3] Examples of second-generation antipsychotic include quetiapine, risperidone, ziprasidone, aripiprazole and olanzapine. Of these agents, olanzapine may have higher anti-muscarinic properties causing increased anticholinergic side effects including acute urinary retention.[4] A newer medication, lurasidone, has negligible affinity for muscarinic and histamine receptors with reduced anticholinergic effects.[5] However, due to cost, limited with insurance coverage and narrower indications for use, lurasidone may not be the first antipsychotic offered without having tried or failed other agents.

Review of the literature, found only several case reports describing acute urinary retention in older adults started on olanzapine.[6] Cohen et al described cases of two older adults with underlying BPH who developed acute kidney injury and urinary retention following use of olanzapine. Underlying urologic conditions or obstructive processes may predispose risk but, in these examples, the retention did not develop until the antipsychotic was added. Another case report described a younger female who developed acute urinary retention after starting olanzapine with improvement when she was switched to another antipsychotic, aripiprazole.[7]

Urinary retention can also be exacerbated by psychological and physiologic stress. Retention can be affected by anatomical etiologies including prolapsed organ, genitourinary mass, stones, strictures or other type of obstruction. Psychogenic retention can be exacerbated by stress and mood disorder, thereby affecting the pressure sensed by the bladder. Thus, patients with predisposing psychiatric disorders may be more prone to anticholinergic effects when additional high-risk medications are added. Increasing evidence has identified the brain’s role in regulating body’s response to stress, affecting lower urinary tract function. More studies are needed to better

understand the underlying mechanisms contributing to these changes.[8]

Finally, there is an increasing demand for management of psychiatric conditions with limited psychiatrists and mental health resources. Primary care providers are increasingly managing and titrating medications for complex psychiatric conditions. Thus, it is even more important to be familiar with the spectrum of pharmacologic agents and their side effects in order to make judicious decisions about use and safety.

Conclusions

Antipsychotics are considered effective agents for managing psychotic disorders and may have dose-dependent anticholinergic properties. Although atypical antipsychotics vary with degrees of blockade, olanzapine has the greatest binding affinity for muscarinic receptors and may pose the greatest anticholinergic risks. Decreasing or discontinuing the offending agent can reduce the antimuscarinic properties and lead to improvement in symptoms. In this case, olanzapine was transitioned to lurasidone which has minimal antimuscarinic and antihistaminic properties, leading to improvement in the patient's urinary retention. In adults with multiple comorbidities, including underlying urologic conditions or BPH, the addition of these medications can amplify the side effects. When other organic and contributing factors have been ruled out, it is important to consider the anticholinergic effects of certain psychiatric medications with the goal of reducing polypharmacy as part of a comprehensive treatment plan.

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