Neurogenic Bladder and Urinary Retention Associated with Mequitazine in an Elderly Male Patient

Atsushi Takayama¹2, Takahiko Nagamine³

ABSTRACT

Backgrounds: The use of medication with anticholinergic properties is widespread among older subjects. One of the most frequent adverse effects of anticholinergic properties for elderly patients is urinary retention.

Method: We report an elderly patient with acute-on-chronic urinary retention associated with mequitazine, a histamine H1 antagonist.

Case presentation: A 91-year-old male presented to our emergency department for abdominal pain with difficulty urinating. The symptoms just started after the mequitazine dosage increased from 3 mg once daily to 3 mg twice daily. Initial vital signs revealed tachypnea as 24 breaths/min. Genitourinary examination demonstrated a marked vesical globe. A transurethral catheter was placed to relieve urinary retention. 7,300 mL red coloured urine flow during 24 hours was recognized, which indicated postobstructive diuresis and hematuria. Computed tomography of the bladder revealed a marked increase in bladder epithelium. Regrettably, symptoms of urinary retention persisted despite complete cessation of mequitazine.

Conclusions: Chronic mequitazine use may lead to neurogenic bladder and urinary retention. Tachypnea was noted among initial vital signs. Respiratory rate may be useful for patient’s severity. A marked increase in bladder wall thickness may indicate poor prognosis of the patients’ bladder function. Physician should be aware of adverse effects of mequitazine as an anticholinergic property and complications by the rapid bladder decompression such as postobstructive diuresis and hematuria.

KEY WORDS

teachazine, anticholinergic property, neurogenic bladder, respiratory rate, postobstructive diuresis, bladder wall thickness

INTRODUCTION

The use of medication with anticholinergic properties is widespread among older subjects. Many drugs of common use such as antispasmodics, bronchodilators, antiarrhythmics, antihistamines, and anti-hypertensive drugs have been demonstrated to have an anticholinergic activity. The common adverse effects of anticholinergic properties are dry mouth, nausea, vomiting, constipation, abdominal pain, blurred vision, tachycardia and neurologic impairment such as confusion, agitation and coma. Among elderly male patients, one of the most frequent adverse effects of anticholinergic properties is urinary retention that can cause great discomfort and pain. Mequitazine, a histamine H1 antagonist, has a high anticholinergic effect. We report an elderly patient with acute-on-chronic urinary retention associated with mequitazine.

CASE PRESENTATION

A 91-year-old male presented to our emergency department for abdominal pain with difficulty urinating. The symptoms had lasted for about 24 hours and had just started after the mequitazine dosage increased from 3 mg once daily to 3 mg twice daily. His medical history included senile pruritus and laryngectomy due to laryngeal cancer 15 years ago with no recurrence. He denied any recent dysuria, hematuria, or urethral discharge, and denied renal insufficiency, prostatic hypertrophy, or recurrent urinary tract infections. Initial vital signs were as follows: temperature, 36.5°C; heart rate, 88 bpm; blood pressure, 134/86 mm Hg; respiratory rate, 24 breaths/min; and pulse oximetry, 97% on room air. Cardiovascular examination was normal, and lungs were clear to auscultation bilaterally. Neurological examination revealed an alert elderly man with no focal deficits. Cranial nerves and cerebellar function were intact, there were no paresthesias, weakness or paralysis. Genitourinary examination demonstrated a marked vesical globe without costovertebral angle tenderness, urethral discharge, or testicular tenderness or masses. Rectal exam demonstrated no evidence of prostatitis or prostatic hypertrophy. Laboratory evaluation revealed a normal complete blood count with no evidence of leukocytosis. The basic electrolyte and metabolic and hormonal profile revealed the following: Na, 138 mEq/L; Cl, 99 mEq/L; BUN, 39 mg/dL; creatinine, 1.5 mg/dL; glucose, 89 mg/dL; uric acid, 6.5 mg/dL; and Antidiuretic Hormone, 7.3 pg/mL (reference range = 2.8 pg/mL). Kidney-ureter-bladder film was normal. No pathology was found on brain computed tomography. Abdominal ultrasonography revealed dilated bladder and mild hydronephrosis. A transurethral (TU) catheter was placed as the patient had a vesical globe, and attached to a leg-bag reservoir, leading to output of approximately 500 mL of clear yellow urine over the subsequent an hour. Mequitazine was discontinued immediately. Initial urinalysis was normal and urine
in an hour or two of emptying the bladder will almost certainly be specially atrial natriuretic peptide 4). Moreover, bleeding which occurs with medullary concentration gradient, effect of circulating hormones, especially impaired concentrating ability of renal tubules due to loss of the cortic- erization. The causes of the postobstructive diuresis are multifactorial: the respiratory rate decreased to normal range of 18 breaths/min. Thus, the TU catheter was removed 8 days after the discontinuation of mequitazine, and urination was monitored. But the TU catheter was re-inserted when the patient developed a vesical globe again. Computed tomography of the bladder revealed a marked increase in bladder epithelium of average 4.6 mm, which indicated subclinical long-lasting neurogenic bladder (Figure 1). Regrettably, symptoms of urinary retention persisted despite complete cessation of mequitazine use. He was discharged with a TU catheter in place on 75th hospital day because a month bladder training did not improve urinary retention.

DISCUSSION

Various classes of medications can cause urinary retention by interfering with nerve signals to the bladder. Medications with anticholinergic properties cause urinary retention by decreasing bladder detrusor muscle contraction. Some antihistamines have low receptor specificity. These antihistamines also are potent muscarinic receptor antagonists that can lead to serious anticholinergic side effects. Quantitative evaluation of antimuscarinic effects of antihistamines using a receptor-binding assay revealed a broad range of antimuscarinic potencies with Ki value from 5.0 nM to 30,000 nM. Mequitazine had the highest affinity for the muscarinic receptors (Ki = 5.0 nM) among H1-receptor antagonists 3). These results should provide helpful information with regard to the clinical use of antihistamines, indicating that some antihistamines such as mequitazine have a marked risk of urinary retention.

Acute urinary retention, a potentially life-threatening medical condition, requires immediate emergency treatment. Treatment of acute urinary retention begins with catheterization to relieve the immediate distress of a full bladder. In this case postobstructive diuresis and hematuria was recognized as complications of bladder decompression by catheterization. The causes of the postobstructive diuresis are multifactorial: from retained urea, sodium, and water during the obstruction, an impaired concentrating ability of renal tubules due to loss of the cortico-medullary concentration gradient, effect of circulating hormones, especially atrial natriuretic peptide 4). Moreover, bleeding which occurs within an hour or two of emptying the bladder will almost certainly be caused by the sudden hyperemia which develops in the bladder mucosa from the large veins that become grossly distended as a result of the sudden release of pressure or rupture of these veins. When it does occur, it is usually mild, inconsequential, resolves within 24-48 h, and rarely requires blood transfusion 5). Postobstructive diuresis or hematuria has not been shown to correlate with the degree of plasma creatinine elevation or the extent of renal impairment. Studies that directly compared slow versus rapid bladder decompression found no significant difference in the incidence of complications 6). However, elderly patients would easily develop dehydration due to sudden diuresis. Physician should monitor general condition of the patient such as vital sign, appetite and activity. Interestingly, in our patient, respiratory rates were correlated with urinary retention and its complications such as postobstructive diuresis. The respiration is a unique physiologic function, which is automatic. There are several physiological states like pain, emotion, and visceral autonomic challenges that modify the respiration. For this reason the respiratory rate has emerged to detect physical abnormalities.

Measurement of bladder wall thickness (BWT) is an easy, quick, and repeatable test to predict bladder obstruction severity. A positive correlation was found between BWT and bladder obstruction, whereas a negative correlation was found between BWT and urinary outflow. G et al. reported that BWT was 2.9 mm in patients without bladder obstruction, whereas BWT was 3.5 mm, 4.5 mm in patients with mild obstruction and severe obstruction, respectively 7). However, the changes of bladder wall hypertrophy parameters still have limitations to directly reflect the relief of bladder obstruction, because there is no definite change in mean BWT even after relieving bladder obstruction 8). Our patient showed marked BMT, which might suggest acute-on-chronic urinary obstruction by mequitazine. The existence of the persistent BWT like our patient may indicate poor prognosis of bladder function.

CONCLUSIONS

Chronic mequitazine use may lead to neurogenic bladder and urinary retention. Elderly patients can be particularly sensitive to the anticholinergic action of drugs because of physiological and pathophysiological changes that often accompany the aging process. Acute urinary retention and complications by the rapid bladder decompression caused tachypnea in this patient. Respiratory rate may be related to patient’s severity. Moreover, a marked increase in BWT may indicate poor prognosis of patient’s bladder function.

REFERENCES