Urinary Retention as a Cause of Hyponatremia in an Elderly Man

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Abstract Hyponatremia is a common disorder in elderly and can result in changes in cognition, seizures, coma or even respiratory arrest if not recognised and treated. Syndrome of inappropriate anti diuretic hormone secretion (SIADH) is the most common cause of hyponatremia in elderly hospitalised patients and in most cases the etiology cannot be determined on routine investigations. We present a 76 year old male with symptomatic hyponatremia who had chronic urinary retention due to a urethral stricture. His sodium levels improved with catheterisation and worsened again after the catheter was removed. This supports the hypothesis that urinary retention and bladder distension can stimulate ADH release from the posterior pituitary, producing a picture similar to SIADH.

Keywords Hyponatremia · Urinary retention · SIADH

Introduction

Hyponatremia is a common disorder in elderly. It affects about 10 % of people living at home and 20 % in hospitalized elderly [1]. Hyponatremia occurs due to excess of water relative to sodium in extracellular fluid. It can occur in setting of decreased (hypovolemic), normal (euvolemic) or increased (hypervolemic) intravascular volume. In elderly, hyponatremia is multifactorial. It can be due to age related decrease in total body water, diminished thirst mechanism or age related reduction in glomerular filtration

rate (fewer glomeruli and a decreased renal blood flow in the elderly), which results in increased passive reabsorption of water in the distal tubule and impaired urinary diluting capacity [2, 3]. Syndrome of inappropriate anti diuretic hormone secretion (SIADH) is the commonest cause of chronic hyponatremia and in most of the cases the etiology remains unclear even after routine investigations [4]. Diagnostic criteria for SIADH include hypotonic hyponatremia, urine osmolality >100 mOsm/kg, in absence of evidence of extracellular volume depletion and with a normal thyroid, adrenal, cardiac, hepatic and renal function [5].

Case Report

A 76 years old gentleman was admitted for evaluation of recent onset constipation, anorexia and weight loss. He also had episodes of forgetfulness and confusion for 2–3 months prior to admission, which had been attributed to hyponatremia. There was no history of seizures, loss of consciousness or recurrent falls. He had a urethral stricture diagnosed 4 years back, for which he had been on weekly urethral self calibration. He was a known diabetic and hypertensive and was on regular medication for the same. He was a reformed smoker.

On examination, he was hemodynamically stable and adequately hydrated. He was alert and oriented to place and person. Memory was preserved. He had perioral dyskinesias, mild rigidity in both upper and lower limbs, slowness of gait with reduced arm swing. Urethral meatus was narrow and urinary bladder was palpable.

Evaluation revealed hyponatremia (serum sodium—120 mmol/l). He was euvolemic, serum osmolality was low (260 mOsm/kg) and urine spot sodium was elevated

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(129 mmol/l). There was no evidence of cardiac (electrocardiogram—normal), renal (serum creatinine—1.09 mg/dl), adrenal (normal serum cortisol) or thyroid (TSH 1.091 μ IU/ml) dysfunction. Hence a diagnosis of SIADH was made. The possibilities considered for SIADH were occult malignancy and drugs. No offending drugs were found. PET CT scan done to look for occult malignancy did not reveal any significant abnormality. Colonoscopy was done to rule out a colonic malignancy. Imaging of the brain revealed age appropriate cerebral and cerebellar atrophy and CSF analysis and EEG were normal. Ultrasonography of abdomen revealed a scarred right kidney and prostatomegaly. Uroflowmetry revealed a post voidal residual urine of 285 ml.

Fluid intake was restricted and extra salt was started orally. However, there was no significant improvement in the sodium levels and his sensorium kept fluctuating. Hence, 3 % normal saline was given despite which sodium was only partly corrected (from 120 to 125 mmol/l in 5 days). A week after admission, he developed acute urinary retention following which urinary bladder was catheterised. Post catheterisation, sodium level became normal within 2 days (from 127 to 137 mmol/l) without any change in the line of management. The Foley's catheter was removed before discharge, and he was advised weekly self calibration and tamsulosin by our urology colleagues. However, he was not compliant with the urethral self calibration as advised and at follow up, he was again noted to have urinary retention and hyponatremia.

Discussion

Urinary retention is a common problem in elderly. One-third of patients admitted into elderly convalescent wards have some voiding dysfunction. In large surveys of elderly

men for symptoms of urinary obstruction, a prevalence of 20–35 % has been estimated. Our patient had chronic retention of urine due to urethral stricture. It has been postulated that chronic urinary retention and subsequent bladder distension can stimulate ADH release from the posterior pituitary, producing a clinical picture similar to SIADH [6, 7]. Although urinary retention may improve marginally with medications, surgical management can give a much better relief.

Conclusion

In elderly, chronic urinary retention may be a common yet unnoticed cause of hyponatremia, for which treatment can be offered.

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