Giant urinary bladder (11 000 mL in volume) with bilateral lower limb oedema: an unusual cause of inferior vena cava obstruction

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DESCRIPTION

An 80-year-old man with diabetes with history of spinal cord injury 15 years back now presented to us with complaints of painless progressive abdominal distension for 10 years and lower limb swelling for the last 4 months. He also had history of recurrent urinary infections, constipation, lower limb weakness, urinary incontinence, abdominal straining during micturition and voiding lower urinary tract symptoms. There was no history of fever, vomiting, breathlessness, weight loss and melena. On general physical examination, pitting oedema of both lower limbs was noticed. Abdominal examination revealed diffuse, symmetrical, non-tender, massive abdominal distension with shifting dullness and dilated superficial abdominal veins. On digital rectal examination, reduced anal tone was noted. Prostatic examination was unremarkable. Blood serum chemistries revealed uncontrolled diabetes (random blood sugar: 226 g/dL; haemoglobin A1c: 7.8%), mildly deranged renal function tests (blood urea nitrogen: 51 mg/dL; serum creatinine: 1.4 mg/dL) and a normal serum Prostate Specific Antigen (3.8 ng/mL). Other laboratory investigations including urine analysis and culture were unremarkable.

Ultrasound of the abdomen suggested a large fluid-filled cystic mass occupying the whole abdomen with mild bilateral hydroureteronephrosis (HDUN) with 35 cc prostate. A further evaluation with abdominal contrast-enhanced CT scan was done which showed hugely enlarged bladder (29×26×18 cm, volume: 10 995 mL) extending

Figure 2 (A,B) Contrast-enhanced CT scan of the abdomen (transverse and coronal sections) showing severe inferior vena cava compression (IVC) with mild bilateral hydroureteronephrosis.

from the epigastrium to the pelvis with mild bilateral HDUN, with severe inferior vena cava (IVC) and common iliac vein compression with 36 cc homogeneous prostate, as shown in figures 1 and 2. Per-urethral catheterisation with gradual bladder decompression was done which drained about 10.5 L of clear urine in the first 4 hours. Over the course of days, the abdominal distension, constipation and lower limb oedema gradually subsided. Further evaluation with urodynamic study revealed underactive bladder, low compliance with low flow pattern with raised postvoid residual volume (6000 cc). He was advised for clean intermittent catheterisation (CIC) for neurogenic bladder and with strict diabetes control. At 6-month follow-up, the ultrasound showed resolution of HDUN with decreased bladder volume of 1200 mL. His renal function test improved and diabetes mellitus was well controlled.

Chronically distended bladder is an unusual presentation with an incidence rate of 0.8% per annum in elderly populations. The possible causes may be diabetes, benign prostatic hyperplasia, posterior urethral valve, neurogenic diseases like spinal cord injury, multiple sclerosis and previous abdominal/pelvic surgery. Giant bladder (GB) is an extremely rare entity and is not clearly defined in terms of bladder volume or other parameters. There is only a handful of reported cases in the literature and mostly were below 5 L volume. Yücel *et al*¹ reported a case of GB due to diabetic neuropathy with a capacity of 10 500 mL, the largest reported volume in the literature to date.¹ Ay *et*

Figure 1 Contrast-enhanced CT scan of the abdomen (coronal and sagittal sections) showing the giant bladder (29×26×18 cm, volume: 10 995 mL) extending from the epigastrium to the pelvis.

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Learning points

- ▶ Giant bladder (GB) is an extremely rare, gradually progressive clinical entity due to prostate enlargement or neurogenic impairment.
- ▶ It is mostly asymptomatic, but rarely it may present as an inferior vena cava compression or constipation.
- ▶ GB must be kept in mind if patients present with progressive abdominal distension and voiding symptoms.
- ▶ The treatment of GB usually consists of urinary catheterisation, correction of the underlying aetiology, anticholinergics and/or reduction cystoplasty.
- ▶ Compressive symptoms usually subside with prolonged bladder decompression or clean intermittent catheterisation alone.

*al*² also presented a 6000 mL capacity asymptomatic idiopathic atonic bladder in 2013. The present case has the largest volume of bladder (11 000 mL) reported.

These patients usually remain asymptomatic in spite of a large volume retention (>1000 mL). But with a fixed volume of the pelvis, bladder distension can compress adjacent structures. A distended bladder can compress adjacent bowel, vessels or other vital structures, although IVC and iliac venous obstruction are very infrequently encountered entities. Less than 30 cases of IVC obstruction/syndrome due to GB have been reported in the literature and were mostly due to benign prostatic enlargement.³ Out of these, only few cases resulted from atonic or neurogenic

bladder. Rarely, it can also compress the rectosigmoid colon and may cause intestinal obstruction or constipation. Exceptionally, our patient presented with both IVC obstruction and constipation.

The goals of treatment are to prevent upper and lower urinary tract complications, including HDUN, renal stone, infections and vesicoureteric reflux. The treatment of GB usually consists of urinary decompression with catheterisation, correction of primary aetiology, anticholinergics and/or reduction cystoplasty. Most patients usually require urinary catheterisation and correction of the underlying cause. Compressive symptoms usually subside with prolonged bladder decompression or CIC.

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