Hourglass Urinary Bladder in a Male Patient with Paraplegia

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Keywords: urinary bladder; diseases; pathology; spinal cord injuries; paraplegia; etiology; complications.

INTRODUCTION

Hourglass deformity of urinary bladder may occur as a result of congenital malformations (the commonest cause), herniated calculous bladder with an incarcerated incisional hernia, hypertonic neurogenic bladders, an improperly constructed augmentation cystoplasty or tuberculous cystitis.[(1)] We describe a spinal cord injury patient with paraplegia, who had undergone suprapubic cystostomy. Hourglass bladder was detected by computed tomography, which was performed to investigate infected pressure sore in left hip.

CASE REPORT

A British, Caucasian male, born in 1938, sustained complete paraplegia at T8 level in March 1978 due to fall from a ladder while working on a drain pipe. He had indwelling urethral catheter during the acute stage and then condom drainage. In 1989, he underwent implantation of Medtronic SynchroMed pump for intrathecal delivery of baclofen. In 1997, this patient developed a pressure sore in perineum involving the urethra, which was repaired by posterior thigh flap. The flap broke down. Therefore, suprapubic cystostomy was performed on 12 December 1997. He was not prescribed any antimuscarinic drugs. The bulbar urethra got closed completely. In April 2008, this patient developed urinary tract infection. Computed tomography (CT) scan of urinary tract revealed right renal calculi. The right kidney was hydronephrotic with dilatation of the pelvis and hydroureter extending all the way up to the vesico-ureteric junction with calcification/calculi noted within the right lower ureter. There were also calculi within the right renal pelvis and right lower pelvicalyceal system. Right nephrostomy was performed followed by percutaneous lithotripsy of renal calculi.

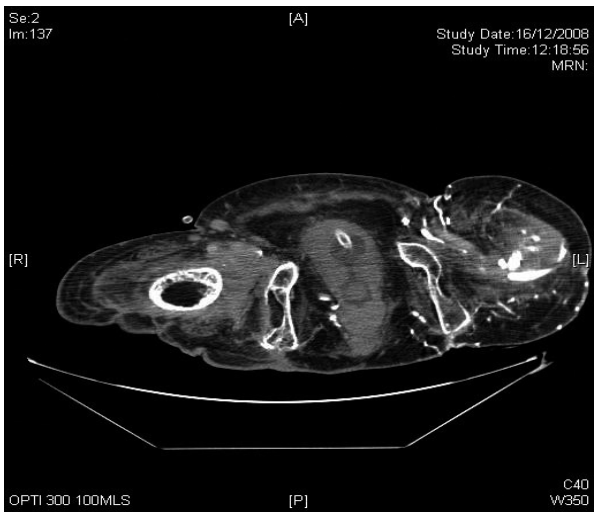

Figure 1. Axial section of computed tomography of pelvis showed inflammatory granulation tissue in right hip; there was old dislocation and resorption of right femoral head. In the left hip, there was an abscess. Again there was resorption and lysis of the femoral head. . An incidental finding was hourglass deformity of urinary bladder. Suprapubic catheter was located in the anterosuperior compartment of the hourglass bladder.

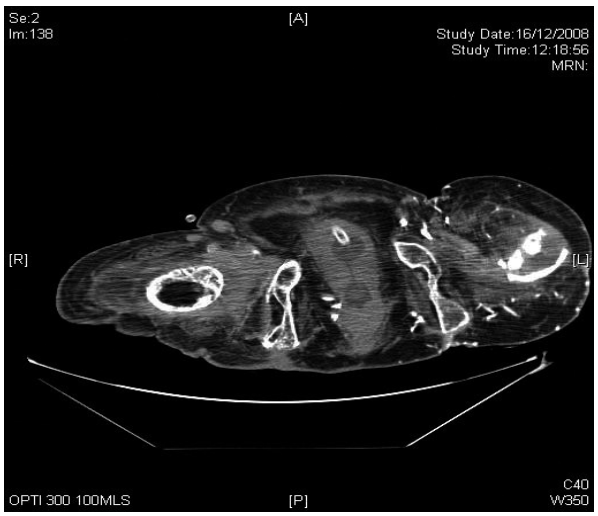

Figure 2. Axial section of computed tomography of pelvis clearly showed hourglass deformity of urinary bladder. Suprapubic catheter was located in the anterosuperior compartment of the hourglass bladder.

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Received April 2011 & Accepted January 2012

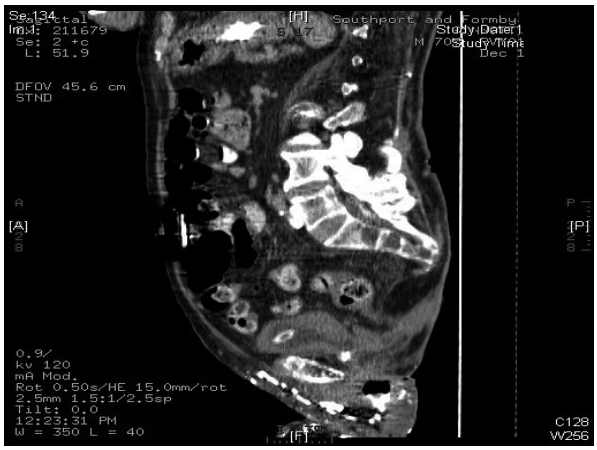

Figure 3. Sagittal reformat of computed tomography of pelvis showed thick walled urinary bladder. Suprapubic catheter was located in the anterosuperior compartment of the hourglass bladder.

In 2008, this patient underwent CT scan of pelvis to investigate infected pressure sore in left hip. CT scan revealed inflammatory granulation tissue in right hip, old dislocation and resorption of the femoral head. An incidental finding was hourglass deformity of urinary bladder (**Figures 1, 2 and 3**). The balloon of Foley catheter was located in the anterosuperior compartment of hourglass bladder.

DISCUSSION

Possible reasons for development of hourglass bladder in spinal cord injury patients are: traction applied to dome of urinary bladder by Foley balloon when suprapubic catheter is taped tightly to anterior abdominal wall for several months; uncoordinated contractions of detrusor muscle; and chronic cystitis leading to hypertrophy of bladder wall.[2] Ogawa and colleagues[3] found high-grade (greater than grade II) bladder deformity more frequently in persons with complete spinal cord injury than in patients with incomplete injury. All patients with low compliance bladder had a high-grade bladder deformity. There was a significant relationship between severity of urinary tract infection and severity of bladder deformity.

Our patient had complete paraplegia and was getting urine infections. Probably, the balloon of Foley catheter, which was taped to anterior abdominal wall, had caused continuous, slow traction upon the bladder over a long period. These factors contributed to development of hourglass deformity of urinary bladder in our patient.

Intermittent catheterization program has been shown to be effective in preventing bladder deformity;[4] unfortunately, this patient could not manage his bladder by intermittent catheterization soon after spinal cord injury. Kim and colleagues[5] studied 109 male spinal cord injured patients at the Houston Veterans Affairs Medical Centre, who had been treated with chronic indwelling catheters (80 transurethral and 29 suprapubic). Thirty-eight patients (35%) were identified as using oxybutynin on a regular basis. These patients were compared to those not using oxybutynin with regard to urodynamic parameters and upper tract deterioration. Regular use of oxybutynin was found to be beneficial in spinal cord injured patients who required chronic indwelling catheters. Hydronephrosis was present in 15 of 66 patients (23%) without oxybutynin versus 1 of 36 (3%) patients, who were taking oxybutynin ($P = .009$). Only recently, we started prescribing oxybutynin or propiverine hydrochloride as a routine to spinal cord injury patients with indwelling urinary catheters in order to reduce complications such as low vesical compliance, high-grade bladder deformity, and hydronephrosis.

Hourglass deformity of urinary bladder is a risk factor for upper urinary tract complications in patients with spinal cord injury.[3,4] This patient with hourglass urinary bladder also developed upper urinary tract complications; he had stones in right kidney with right hydronephrosis.

In order to prevent occurrence of hourglass deformity of urinary bladder in spinal cord injury patients, we have been trying to implement the following measures:

•Intermittent catheterization along with antimuscarinic drug therapy should be recommended as the preferred method of bladder management in spinal cord injury patients

•If a patient requires chronic indwelling urinary catheter, antimuscarinic drugs should be prescribed routinely to reduce uncoordinated contractions of detrusor muscle.

•All possible measures including improved personal hygiene should be undertaken to prevent chronic urinary infection, as chronic bladder infection leads to hypertrophy of bladder wall.

•Traction should not be applied to suprapubic Foley catheter while fixing the catheter to anterior abdominal wall. We routinely use CathGrip (BioDerm Inc. Largo, Florida 33773, USA) to anchor suprapubic catheters in spinal cord injury patients.

CONCLUSION

Patients with hourglass deformity of urinary bladder can develop problems with drainage of suprapubic catheter, especially if the tip of Foley catheter is located in the superior compartment of hourglass bladder. But in this patient, suprapubic catheter continued to drain satisfactorily, as the bulbous urethra had closed completely.

CONFLICT OF INTEREST

None declared.

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