

Case Report

Case report of diabetic neurogenic bladder misdiagnosed as adnexal mass

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Abstract: Diabetic neurogenic bladder (DNB) is one of the most common complications of diabetes. In the present study, a case of a 66-year-old woman with diabetes for 8 years was reported. She was hospitalized due to the discovery of an adnexal mass, with no obvious symptoms. Ultrasound examinations showed the mass in the left accessory area. Moreover, abdominal CT and retrograde urography results confirmed that the adnexal mass was an enlarged bladder. A cystoscopy was then performed. There were multiple cases of diverticulum found in the bladder. An urodynamic study of the patient found that the detrusor muscle had poor contractility during urination. The patient was eventually diagnosed with DNB.

Keywords: Adnexal mass, diabetic neurogenic bladder, misdiagnosis

Introduction

Neurogenic bladder (NB) can also be referred to as neurogenic lower urinary tract dysfunction. Diabetic neurogenic bladder (DNB) is one of the most common chronic complications of diabetes. It is the manifestation of autonomic neuropathy in the genitourinary system. It is estimated that 40%-80% of diabetic patients suffer from DNB. Incidence rates are up to 25%, even in patients sustaining good glycemic control [1, 2]. There are a wide variety of symptoms in DNB. These vary from urge incontinence to overflow incontinence [3]. During the early stages of DNB, there is an increase in bladder storage capacity. For asymptomatic patients, especially for those with good glycemic control, diabetic cystopathy is often ignored by gynecologists. In the present study, a case of DNB misdiagnosed as adnexal mass was reported.

Case report

A 66-year-old woman was admitted to the hospital due to the discovery of an adnexal mass, existing for more than 7 months. The patient had been postmenopausal for 18 years. No

abnormal vaginal bleeding had occurred after menopause. On September 26, 2018, she underwent two-dimensional ultrasound examinations. Results showed a mass (approximately 57*37 mm) in the left accessory area. Since the patient had no obvious abdominal pain and distension, no further management was performed. On April 28, 2019, a re-examination of the ultrasound revealed a cystic mass in the anterior upper part of the uterus, with a size of 112*170 mm. The patient had a medical history of hypertension and diabetes for 8 years. However, these were kept in median control. A gynecological examination of the patient showed atrophy and adhesion of the upper part of the labium minus and clitoris. With difficulty in exposing the urinary meatus and cervix, a huge mass, without tenderness, could be touched in the pelvic cavity. The patient was admitted to the hospital due to the adnexal mass.

After hospitalization, ultrasound results of the urinary system indicated bilateral hydronephrosis and bilateral upper ureter dilation, with no obvious abnormalities in the bladder. To further clarify the nature of the cyst, an abdominal CT was conducted (**Figure 1**). The radiologist highly

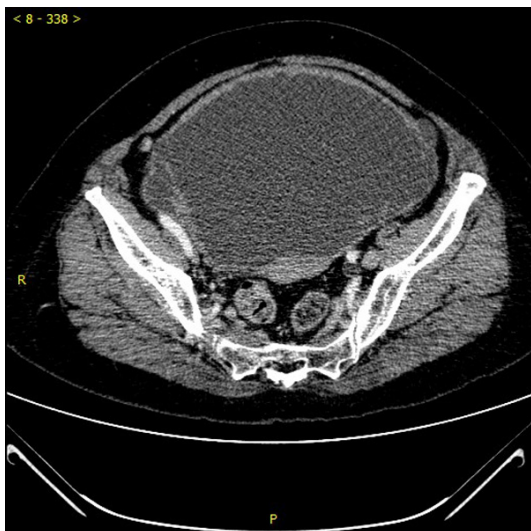


Figure 1. Image of the abdominal CT, showing the “huge pelvic mass”.

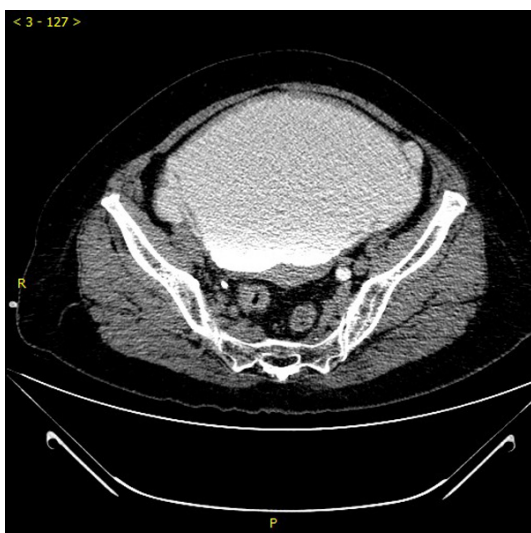


Figure 2. Image of repeated abdominal CTs after catheterization, demonstrating the reduction of the volume of mass.

suspected that the pelvic mass was an enlarged bladder. A retrograde urography was then recommended. Due to the tight adhesion of the labium minus, lidocaine cream was applied to separate the adhesion. After retention of a small balloon catheter and reverse urography, results of repeated abdominal CT scans showed that the volume of mass was significantly reduced (**Figure 2**). Moreover, the contrast agent was filled in the mass (**Figure 3**), confirming that the huge pelvic mass was an enlarged bladder.

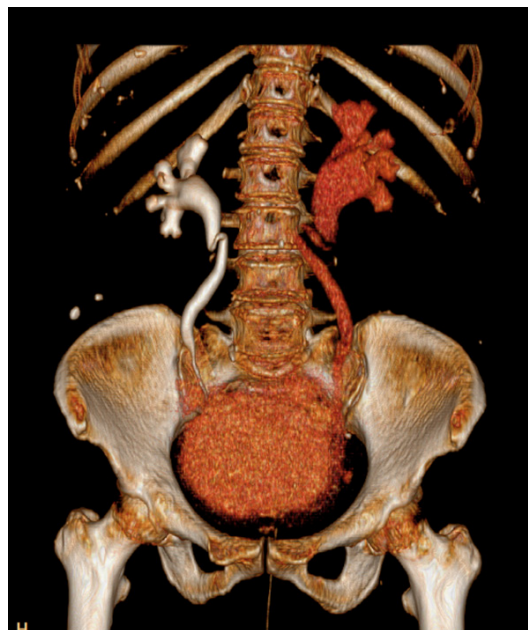


Figure 3. Images of results of reverse urography, confirming that the “huge pelvic mass” was actually an enlarged bladder because of the filling of the contrast agent in the “mass”.

The patient was referred to the Urinary Surgery Department for further treatment. A cystoscopy was performed. No stricture was observed throughout the urethra. However, there were multiple cases of diverticulum found in the bladder. A urodynamic study of the patient found that the detrusor muscle had poor contractility during urination. Combined with a history of diabetes and results of the urodynamic study, the patient was diagnosed with DNB. Sacral neuromodulation was recommended, but the patient refused. Two weeks after discharge, the patient removed the catheter by herself. Currently, the patient receives oral medication and acupuncture treatment.

Discussion

For diabetic patients, DNB has been closely related to peripheral neuropathy. It has been observed in at least 75% of patients with bladder lesions [4]. The exact mechanisms of DNB have not been fully elucidated. In the early stages, hyperglycemia-induced osmotic polyuria is the main mechanistic factor that causes compensatory bladder hypertrophy, as well as associated myogenic and neurogenic alterations. In the later stages, accumulation of oxidative stress products during prolonged hyper-

glycemia causes decompensation of bladder tissue and function [5]. Early diagnosis of the disease mainly relies on the measurement of residual urine by ultrasonography and urodynamic testing. Therefore, for diabetic patients, especially those that are not newly diagnosed, it is recommended that relevant examinations are routinely carried out for a definite early diagnosis. Generally, according to a long history of diabetes with poor blood glucose control, progressive urinary retention, abdominal distention, and excessive residual urine, with the help of ultrasonic examinations, patients can be diagnosed with DNB. Some patients have no obvious symptoms of abnormal micturition, including urgency, frequency, and difficulty of urination. They are often prone to misdiagnosis. Treatment options for DNB mainly include conservative treatment, such as intermittent catheterization treatment, medication, such as antimuscarinics, phosphodiesterase inhibitors, β 3-adrenergic receptor agonist, α -blockers, and botulinum toxin A injections, neuromodulation, such as sacral neuromodulation, pudendal neuromodulation, percutaneous tibial nerve stimulation, and foot stimulation, and urinary tract reconstruction surgery [6]. Alternative promising methods include stem cell transplantation [7] and gene therapy [8]. Therefore, it is imperative to early distinguish DNB from other diseases, aiming to obtain a better prognosis.

Reasons for misdiagnosis, in the present case, were that the huge pelvic mass did not change significantly after urination. Moreover, the patient had no difficulty with urination. Furthermore, severe atrophy and adhesion of her vulva did not allow the ultrasound probe to be placed into her vagina. Clinicians often rely too much on results of ultrasound tests, with a poor understanding of DNB. This further leads to misdiagnosis. In clinical practice, adnexal masses should be distinguished from neurogenic bladders, especially for patients with diabetes. When the mass is obviously reduced after catheterization, this is the simplest identification method. An adnexal mass usually has a long course, which may have past medical history of adnexal or pelvic disease. CT examinations are recommended as preoperative imaging, combined with urological ultrasounds and excretory urography tests for differential diagnosis. NB should be excluded for patients with pelvic masses complicated

with diabetes, vulva adhesion, or other diseases of nervous system and urinary system.

Disclosure of conflict of interest

None.

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