

Urinary Retention Revealing a Vermian Dermoid Cyst: A Case Report

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ABSTRACT

Background

Atypical clinical manifestations are not uncommon in neurosurgical pathology, especially if the symptom is isolated, which can delay diagnosis and treatment. This is the case of our patient who presented with isolated acute urinary retention.

This case report highlights the lack of awareness of the pontine micturition center, which led to a delay in diagnosis and treatment.

Case presentation

A 55-year-old diabetic woman under treatment, suddenly presented with isolated urinary retention. The examination initially focused on the usual causes, which showed no abnormality. A urinary catheter was placed, and the urinary retention was attributed to her diabetes. Subsequently, brain imaging confirmed the diagnosis of a posterior fossa tumor.

The patient underwent surgery and the postoperative course was favorable. The pathological examination was in favor of a dermoid cyst.

Conclusion

A review of the literature established the link between urinary retention and the location of the pontine micturition center. Therefore, recognizing these unusual symptoms is crucial to enable early diagnosis and treatment. Hence the importance of a thorough history taking, clinical examination, and appropriate exploration.

Key words: urinary retention, pontine micturition center, posterior cranial fossa, dermoid cyst

INTRODUCTION

Acute urinary retention in women is rare. Usually the causes are urogenital, medication-related, or even spinal cord lesions from a disc herniation or tumor, not to mention neuropathies and multiple sclerosis.

Nerve pathway lesions, particularly in the spinal cord, which control urination, can cause acute urinary retention. This condition is often associated with other neurological signs.

However, brain damage, especially in the pons area, can also cause urinary retention. This is the case with our patient, whose clinical presentation is summarized solely by this symptom, and whose spinal MRI is normal, which delayed the diagnosis.

The aim of this article is to present an unusual case of acute urinary retention, caused by a tumor in the

posterior cranial fossa. Indeed, in standard neurology textbooks, pontine pathology is not listed as a possible cause of urinary retention in humans. Moreover, reports on this topic are rare in the scientific literature.

CASE REPORT

A 55 years woman, with a history of type II diabetes for seven years and hypothyroidism for twenty years, under treatment, suddenly presents with isolated urinary retention.

A permanent catheter was placed, and the usual causes of acute urinary retention, namely, urogenital and medication-related causes, were ruled out.

Then a CT scan of the lumbosacral spine and a complete spinal MRI study were normal, and this retention was attributed to her diabetes,

Almost a month later, The brain MRI showed a large vermian cyst pressing on the fourth ventricle and compressing the pons, hypointense on T1, heterogeneous on diffusion sequence, and not enhancing after contrast injection, associated with passive hydrocephalus. (Fig1).

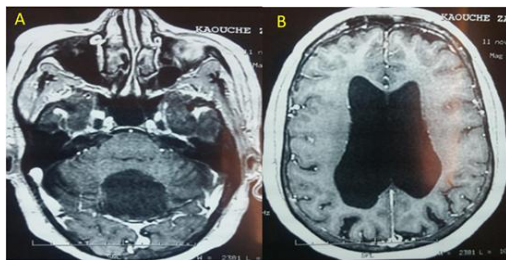


Figure 1. Brain MRI T1-weighted image with IV gadolinium contrast (A) revealing a large midline cyst in the posterior cranial fossa pressing the pons (B) showing moderate hydrocephalus.

Before surgery, in addition to urinary retention, the patient's neurological exam found a mild tetraparesis with a normal fundus.

The patient is operated on through a median suboccipital approach. The cyst is completely evacuated, its contents being pearly white with the presence of hair and calcifications. The capsule is very adherent to the neighboring structures, and its removal is partial. At the end of the intervention, there is a very significant cerebellar depletion, hence the filling of the operative cavity with isotonic saline.

The patient wakes up normally with a clear clinical improvement postoperatively: Disappearance of the quadriparesis and progressive improvement of her urinary retention until she completely got rid of her indwelling cathéter.

Histological examination disclosed the diagnosis of a dermoid cyst.

The postoperative brain MRI done two years after the surgery showed a residual cavity with the disappearance of the compression on the pons and cerebellum, along with an improvement in the hydrocephalus. (Fig 2)

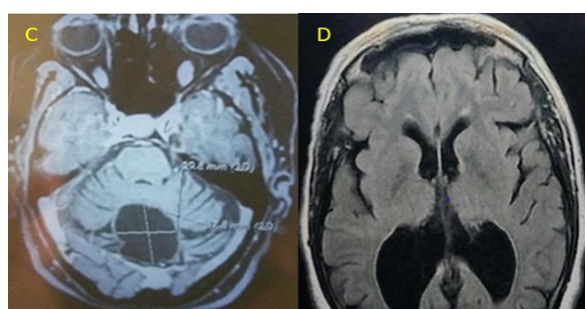


Figure 2. Brain MRI Post resection T1-weighted images with IV gadolinium contrast. (C) residual postoperative cavity (D) regression of the hydrocephalus

DISCUSSION

The patient presented with isolated urinary retention. diabetic neuropathy was retained after ruling out the usual causes of urinary retention, which remains a rare condition in women. The diagnosis of a brain fossa tumor was made late. This highlights the complexity and challenges of diagnosing certain neurological conditions.

It turns out, that there is a region of the brainstem responsible for micturition, known since Barrington's report in 1925 and identified in cats.

In animals, this center has been localized in the dorsolateral tegmentum of the pons. However, such a center has not been precisely located in humans [1, 2].

According to Holman, micturition disorders in conscious individuals frequently accompany spinal cord and brainstem pathology. However, he reported eight cases of cerebellar tumors occupying the midline or deforming the midline structures by their size, presenting with delayed voluntary urination or urinary retention. For the author, these cases can be considered as evidence that the voluntary act of urination is initiated by impulses coming from the brain [2]. In fact, our patient also presents with urinary retention with a large median cerebellar tumor.

The occurrence of urinary retention in patients with pontine disease has been rarely reported. Ueki in 1960 and Reiner and Gabreels in 1980 mentioned urinary retention in some patients with pontine tumors [3, 4] .

These reports, lacking modern neuroimaging, did not correlate the site and extent of the lesions with urinary disorders.

A reported case of presumed rhombencephalitis presented with urinary retention and its MRI findings. For the author, this is probably the first MRI demonstration of a circumscribed lesion related to the pontine micturition center in humans [5, 6].

In his clinical case report published in 1992, Betts emphasised the importance of the protuberance in urination and even suggested that the superior dorsal tegmentum might be the site of this centre [7].

It was not until Sakakibara's publication in 1996 that the existence of a pontic centre in humans was confirmed. He studied a cohort of 39 patients who, three months after suffering a brainstem stroke, presented with urinary disorders; the most common of these were difficulty urinating and nocturnal pollakiuria in 28%, followed by urinary retention in 21%. Magnetic resonance imaging of symptomatic patients revealed lesions in the dorsolateral region of the pons [8].

Other observations have been documented in the postoperative period. For example, the case of Hanne Baillieux. It was about a child who underwent surgery for a posterior fossa tumor and developed urinary retention, which resolved rapidly [9].

In 2018, Aryo Zare described the exact location of the micturition centre in humans, clarifying the role of the periaqueductal grey matter in the functioning of the lower urinary tract. Given that ,this location had already been proposed some time ago, but without any certainty[10].

This substance plays an important role in bladder physiology, particularly in the storage and voiding of urine. It acts as a relay between the higher decision-making centres of the brain and the lower centres responsible for the micturition reflex. Functional imaging studies have clarified the activity of this substance during the emptying and filling phases of micturition, as well as its connections with various brain centres in living humans [11].

Ultimately, the urinary retention presented by our patient was secondary to compression of the pons, and therefore of the pontine micturition center, by the large dermoid cyst, whose remove improved this symptomatology.

Despite this, sphincter disorders are still associated with spinal cord injury, and the pontic centre is often overlooked.

CONCLUSION

In addition to spinal pathology, sphincter disorders in a conscious, cooperative patient should also prompt the search for pathology of the posterior cranial fossa, particularly at the level of the pons.

Clinical examination and thorough questioning should be conducted to identify other associated symptoms. MRI of the brain and spinal cord remains the key supplementary examination to avoid any diagnostic delay

Ethical consideration: Informed consent was obtained from patient and his family.

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