BRADYPSYCHIA AND URINARY INCONTINENCE SECONDARY TO FRONTAL-LOBE HIGH GRADE ASTROCYTOMA

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ABSTRACT Background: Lower urinary tract symptoms (LUTS) are complaints that characterized by two symptoms, overreactive symptoms such as frequency and urgency, and outlet obstruction symptoms such as difficulty urinating and weak urinary flow. Neurologic diseases such as diabetes mellitus are well-known causes of LUTS. However, LUTS secondary to an intracranial mass lesion has been very rarely described in the literature. Case Report: a 52-year-old woman came to Neurology outpatient clinic with difficulty in communicating. The patient’s family said that the patient often did not connect to talk for approximately three months. Patients also often wet in the bed in the last one month. CT Scan with contrast revealed intracranial lesions in the right frontal lobe and diffuse brain oedema, most likely high-grade astrocytoma. Discussion: Lower urinary tract symptoms (LUTS) are very common in men. There are many causes of LUTS, such as neurologic, anatomic, inflammatory, infection, psychogenic, and idiopathic. Intracranial tumors rarely cause LUTS, but the pathophysiology is known. Andrew and Nathan were the first researchers to report a frequency, urgency, and urinary incontinence syndrome that caused mass in the frontal lobe and anteromedial parts of the frontal lobes, including the cingulate gyrus in 1964. Maurice-Williams also reported a serial case in which 7 of 50 patients with tumors the frontal lobe is associated with LUTS. Conclusion: Frontal lobe mass is an uncommon cause of LUTS. If the person with LUTS has no known cause, then the neurological cause must be considered. Symptoms such as bradypsychia (slowness of thought or mental activity), decreased motivation, and intracranial mass symptoms must be considered in order to determine the cause of LUTS.

KEYWORDS bradypsychia, urine incontinence, astrocytoma

Introduction

Lower urinary tract symptoms (LUTS) are complaints that characterized by two symptoms, an overreactive symptoms such as frequency and urgency, and outlet obstruction symptoms such as difficulty urinating and weak urinary flow. Diseases such as diabetes mellitus are known as one of the causes of LUTS. Symptoms of LUTS caused by intracranial tumors are very rarely reported in the literature. [1]

Case report

A 52-year-old woman came to Neurology outpatient clinic with difficulty in communicating. The patient’s family said that the patient often had slowness of thought and did not connect to talk for approximately three months. Patients also often wet in the bed in the last one month. No complaint of headache, vomiting, or blurry vision. No history of diabetes and hypertension, also. Vital signs were within normal limit. Neurological examination: GCS 4-5-6, the meningeal sign was negative. Pupil reflexes, motoric and sensory function were within normal limit.
Figure 1: CT Scan with contrast revealed intracranial mass in the right frontal lobe and diffuse brain edema, most likely high-grade astrocytoma.

Physiological and pathological reflexes were normal also. CT scan with contrast was done to the observed intracranial lesion. She was hospitalized and treated with citicoline, dexamethasone, and ranitidine. She used diaper for her urinary incontinence and receive a bladder training from physiotherapist. She rejected to have surgery for her intracranial mass. After hospitalized for seven days, she gradually improved condition, and was discharged from hospital.

Discussion

Lower urinary tract symptoms (LUTS) are very common in men. There are many causes of LUTS, such as neurologic, anatomic, inflammatory, infection, psychogenic, and idiopathic. Intracranial tumors rarely cause LUTS, but the pathophysiology is known. Andrew and Nathan were the first researchers to report a frequency, urgency, and urinary incontinence syndrome that caused mass in the frontal lobe and anterior-medial parts of the frontal lobes, including the cingulate gyrus in 1964. Maurice-Williams also reported a serial case in which 7 of 50 patients with tumors the frontal lobe is associated with LUTS. [2,3] Lesions from the medial portion of the frontal lobe can cause activation of the central micturition centre in the pons and spinal cord, causing symptoms of urinary incontinence. In normal conditions, a full bladder will send a signal to the centre of micturition in the pons and spinal cord, so that it will then stimulate the detrusor muscle to contract. Relaxation of the external urethral sphincter muscle will also cause inhibition of the sympathetic nerves, thus activating the parasympathetic nerves, which cause the detrusor muscle to contract and urine to come out. Urine flow will cause sphincter muscle relaxation so that the detrusor continues to contract, and urine continues to come out. When the urine flow stops, the sphincter muscle will contract, stimulating the sympathetic nerves, causing the detrusor muscles to relax. When there are lesions in the frontal lobe, the centre of micturition in the pons and spinal cord will be activated, so that the detrusor muscle will continue to contract, causing urine to continue to come out, lead to urinary incontinence. [4]

In a review of the literature, multiple areas of the brain are involved in micturition. Positron emission tomography (PET) scans showed significant activity in the right inferior frontal gyrus and the right anterior cingulate gyrus during voiding. The intended action to urinate was localized to the right inferior frontal gyrus and right anterior cingulate gyrus. Others have also supported this. Cortical activation within the mid-cingulate cortex and the bilateral frontal lobe has also been noted. Besides, there is increased activity with the decreased urge to void at the cingulate cortex and premotor cortex. Others have found multiple other areas of activation during voiding. [4,5,6] Neuroanatomical, the frontal lobe is the largest lobe of the brain in front of the central sulcus. Based on function, the frontal lobes are divided into three areas, namely the primary motor cortex, supplemental and premotor cortex, and prefrontal cortex. The inferolateral area is the Broca area (Broadmann 44 and 45) which functions in the speech process. Lesions in this area cause weakness and disturbance of muscle movements on the contralateral side. Besides, lesions in this area also cause impaired subtle functions such as loss of motivation, decision making, slowness of thought and mental activity (bradypsychia), and decreased speech production. All of these symptoms are a syndrome called frontal lobe syndrome. Frontal lobe syndrome is a syndrome that occurs as a result of damage or malfunction of the prefrontal cortex. These areas include the anterior cingulate, lateral prefrontal cortex, orbitofrontal cortex, and frontal poles. [7]
Conclusion
Frontal lobe mass is an uncommon cause of LUTS. If the person with LUTS has no known cause, then the neurological cause must be considered. Symptoms such as bradypsychia (slowness of thought or mental activity), decreased motivation, and intracranial mass symptoms must be considered in order to determine the cause of LUTS.

Conflict of interest
The authors declare no conflict of interest.

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