

Restless Legs Syndrome as a First Indicator of a Meningioma-Induced Compression of Brainstem and Cervical Spinal Cord: A Case Report

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Received: March 21, 2017; Published: April 12, 2017

Abstract

We report on a patient who presented with a typical Restless Legs Syndrome (RLS) but, after a few months, developed additional symptoms suggesting a progressive spinal cord damage. Magnetic resonance imaging showed a large meningioma compressing lower brain stem and upper cervical spinal cord. Immediately after surgical removal, RLS symptoms disappeared completely and did not return during a follow-up period of 4 months. A potential role of dopaminergic pathways descending from the brain stem is discussed.

Keywords: Restless Legs Syndrome; Meningioma; Cervical Spinal Cord; Brain Stem

Introduction

Restless legs syndrome (RLS) is one of the most common neurological diseases that affects up to 4,5 % of the general population when setting the frequency to at least 3 days per week [1]. Symptoms mainly consist of abnormalities in sensation and motor activity [2]. Diagnostic criteria include an urge to move, uncomfortable sensations, motor restlessness, worsening of symptoms during relaxation and in the evening. RLS occurs in association with other diseases and conditions, in particular iron deficit, pregnancy, uremia, severe liver dysfunction, thyroid dysfunction, peripheral polyneuropathy, multiple sclerosis, Parkinson's disease and rheumatoid arthritis [3].

Case Report

This 52-year-old woman reported symptoms consistent with RLS for approximately 10 years. Initially, she felt an urge to move her legs only during long car rides. Simultaneously, prickling and tingling sensations developed in her thighs. Symptoms disappeared immediately during walking. Subsequently, symptoms also developed when she was sitting on a chair and lying in her bed. The discomfort was pronounced during evening and night time and in situations of physical inactivity. Family history was positive, her father as well as her identical twin suffered from RLS. As additional symptoms, the patient mentioned sensations of feeling 'electrified' and extreme cold in her extremities and pain in her cervical spine. She also reported that it was more difficult to empty the bladder. At that time, neurological examination was entirely normal. Blood analyses excluded iron deficit, liver, thyroid or kidney dysfunction. On the International RLS severity scale [4] she scored 37 (out of a maximum of 40) points. Rotigotine was prescribed. However, the patient was afraid of side effects and did not try this medication.

Approximately 3 months later, she developed additional symptoms. Co-ordination and strength of the limbs decreased, her jogging velocity was reduced, pain in the cervical spine became more intense, the range of head movements decreased, bladder emptying became more difficult and she developed a paresis of her left toes. A magnetic resonance imaging of the brain was performed. It showed a large extra-axial tumor located above and below the foramen magnum, compressing medulla oblongata and upper spinal cord (Figure 1A). The

tumor was suspected to be a meningioma and was completely removed (Figure 1B) without side effects. Histopathological analysis classified the tumor as an angiomatous meningioma. Immediately after surgery, RLS symptoms had completely disappeared. Four months post-surgery she still scored 0 points on the International RLS severity scale.

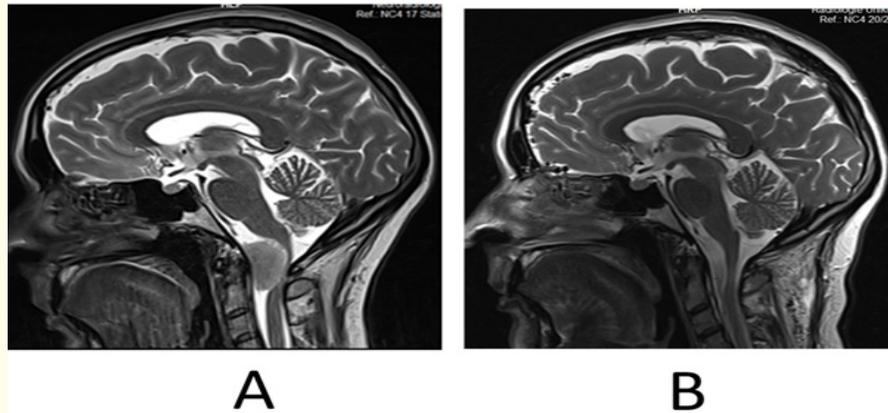


Figure 1: Magnetic resonance imaging of an angiomatous meningioma before (A) and after (B) surgical intervention.

Discussion

To our knowledge, this is the second report on a tumor evoking RLS symptoms. The first case, published by Glasauer and Egnatchick [5] had a very similar tumor location. Other parallels include a positive family history of RLS, the type of tumor (meningioma) and the disappearance of most RLS symptoms after surgery.

RLS pathophysiology is still under discussion. Presumably, several mechanisms play a role. A central disorder of sensory-motor integration and a functional deficit of dopaminergic pathways with a circadian fluctuation of dopamine is suspected [6]. Interestingly, a recent study [7] described differences between RLS patients and healthy controls when performing a diffusion tensor imaging (DTI) analysis of the cervical spinal cord and the brainstem. The results suggested microstructural alterations in the midbrain and in the upper spinal cord of RLS patients.

Conclusion

Considering our case and the case published earlier, we conclude that, rarely, RLS symptoms might be the first indicator of a tumor located at the foramen magnum level. We speculate that susceptibility for RLS is a prerequisite since both patients had a positive family history. Possibly, compression by the tumor had affected dopaminergic descending pathways.

Conflict of Interest

The authors declare that none of them has any conflict of interest to report.

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Volume 5 Issue 5 April 2017

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