

Lung Cancer as the Cause of Sleep-Related Rhythmic Movement Disorder

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Abstract

Sleep-related Rhythmic Movement Disorder (SRMD) generally occurs during the neonatal period or early childhood. However, it has not yet been precisely defined despite various hypotheses with respect to its etiopathogenesis. These types of movements rarely continue during adulthood. SRMD, likely to be idiopathic, may develop due to secondary causes as well. In this study, we highlight adult-onset SRMD in a patient with the diagnosis of lung cancer.

Introduction

Sleep-related Rhythmic Movement Disorder (SRMD) is a disease characterized by stereotypical movements, i.e. in the way that the body particularly wriggles back and forth or right and left; the head and the neck hits/bangs the pillow vertically or horizontally; and the limbs move right and left and back and forth, all of which are all observed at the time of falling asleep or during superficial non-rapid eye movement sleep. According to the recent International Classification of Sleep Disorders (ICSD-2), the diagnostic criteria for this disease include recurrent, stereotypical and rhythmic motor behavior; movements involving major muscle groups which are often associated with sleep and are observed during night sleep or while the patient is sleepy or about to fall asleep; behavior/actions disrupting normal sleep; obvious impairment in daily functioning; and the patient having at least one of the complaints of self-destruction which definitely necessitates medical treatment [1].

SRMD is quite prevalent during the neonatal period and early childhood and is expected to remit spontaneously after the age of four. The movements in question infrequently continue during adulthood. The incidence of this disorder is observed as 59% during the neonatal period, 33.5% when the baby is 18 months old and 5% around the age of 5; it is seen rarely during adulthood [2]. The progression of such movements during puberty and adulthood is usually suggested to have an association with mental retardation, autism or other major pathologies [3]. However, in the literature, there are also some cases described among adults with normal intelligence [4].

SRMD, likely to be idiopathic, may also develop due to secondary causes. Diseases, such as Parkinson's disease, amyotrophic lateral sclerosis, multiple sclerosis, chronic myelopathy, peripheral neuropathy, or those caused by deficiency of vitamin B12, as well as radiculopathy, neurological diseases (e.g. among patients who have suffered a cerebrovascular accident) and malignities, anemia, rheumatoid arthritis, uremia, diabetes mellitus, COPD (chronic obstructive pulmonary disease) and vascular insufficiency may lead to SRMD.

In this case, we aim to highlight the association of adult-onset SRMD and cancer with reference to a patient we have been examining following the diagnosis of locally-advanced lung cancer.

Case Report

The 56-year-old male patient was admitted to the emergency department with the complaint of a disorder due to his general medical condition trembling and high fever. In his medical record, he had

undergone a laminectomy and posterior decompression operations on T2-T3-T4 vertebrae after having been diagnosed with stage IIIB lung cancer eight months prior (Figures 1 and 2). Since the diagnosis, he had been administered chemo radiotherapy and four cisplatin and gemcitabine chemotherapy treatments. It was learned that the patient, having received his last chemotherapy treatment three months ago. During his hospitalization, the patient had a fever of 39 °C, his blood pressure was 90/60 mmHg, while his pulse rate was 98/min in his physical examination. The other physical examination findings were normal except for a third-degree systolic ejection murmur in the mitral focus. In the laboratory analysis, the leukocyte was 6100/mm³, hemoglobin: 10.1 g/dL, thrombolytic: 127.000/mm³, glucose: 104 mg/dl, urea: 47 mg/dl, creatinine: 0.9 mg/dl, ALT: 23 IU/L, AST: 19

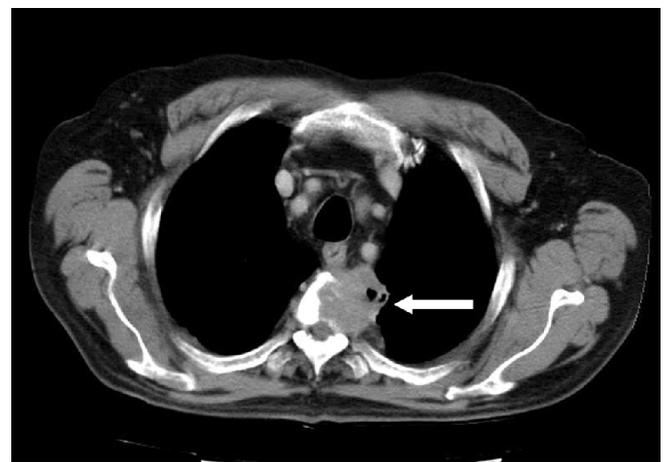


Figure 1: Scan of mediastinal window shows a malign mass lesion (white arrow) on posterior segment of the left lung upper lobe with invasion of corpus vertebrae (intermittent arrow).

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Figure 2: Scan of lung window shows a paravertebral central necrotic spiculated, extensive mass lesion on posterior segment of the left lung upper lobe (white arrow).

IU/L, and Na was 136 mmol/L. The patient, whose C-reactive protein was 264 mg/dL and sedimentation was 107 mm/hour, had a normal microscopic urine analysis and there was no evidence of infection on chest radiograph. Since no apparent focus of infection could be determined, the patient was interned, starting with an empiric treatment with ceftriaxone. In his transesophageal echocardiography for the current cardiac murmur etiology, he was diagnosed with endocarditic after vegetation had been detected on the mitral valve, and thus, the antibiotherapy was replaced with ampicillin, sulbactam and gentamicin. During his follow-up process, at the time of falling asleep and at any period of his sleep, he was obviously observed to have stereotypical back and forth pulsations of the limbs with a high amplitude and convulsions of the head in a vertical position along with ongoing fatigue all day long. It was learned that from the patient's wife these findings are the last 3 months. Although the symptoms of fever, feeling cold, trembling and hypotension remitted when the treatment of the patient (with no bacterial growth in his blood culture) was completed after 21 days, neither the stereotypical limb movements that developed while falling asleep and during sleep nor the complaints of somniloquism had ceased. In order to evaluate the paraneoplastic causes, the antibody panel was examined. While Scl-70 proved to be positive, RNP/Sm, Ro-52 recombinant, Jo-1, dsDNA, histones, and ribosomal-P-protein were determined to be negative.

There was no metastasis, and any findings of ischemia in the cranial MRI. In the electromyography (EMG), a peripheral polyneuropathy was determined. The neurological examination of the patient (consulted neurologically and psychiatrically) was normal. The treatment of haloperidol (10 mg/day) and sertraline (100 mg/day) was started taking the organic brain syndrome into consideration, and the treatment was carried out for eight days. However, there was no recovery according to the findings during the follow-up period. Video recordings made during his sleep phases were analyzed, and the stereotypical limb movements and the head movements, in the form of convulsions during sleep, were evaluated as SRMD. Thus, considering this condition of the patient, a treatment with 900 mg/day of gabapentin was initiated and from the second day onwards the involuntary, stereotypical limb movements developing during sleep and the observations of somniloquism ceased completely. The patient continues to receive gabapentin and there was no recurrence observed during the 1-year follow-up.

Discussion

SRMD is a sleep-related rhythmic movement disorder which generally occurs during the neonatal period or early childhood. However, it has not yet been precisely defined despite various hypotheses with respect to its etiopathogenesis. In SRMD, there is an increase in the heart rate and EEG delta activity prior to the movements, and an increase in the alpha, sigma and beta wave frequencies together with the movement. The increase in the delta and cardiac activities prior to the motor activity causes the activity in the cerebral trunk/brain stem to increase, as well as enhancing the activity of the spinal motor neurons. Therefore, rapid EEG activity and the permanency of the reaction of wakefulness associated with movements is maintained [5].

In the posterior portion of the spinal cord the existence of dopaminergic neurons is detected. The gracilis and cuneate fasciculus lesions at the levels of L4-S1 and a smaller rate of C6-C7 were reported to give rise to SRMD. This condition is caused by the activation and disinhibition of the posterior portion of the spinal cord on the striated muscles [6].

In the literature, there is information with respect to the fact that SRMD only rarely continues to present during puberty or adulthood. Yet, no cases of adult-onset SRMD associated with cancer have been reported so far.

Mayer et al. [7] reported on 24 cases of patients aged 11–67 whose SRMD continued during puberty and adulthood. Of these cases, the age of onset in two people was unknown, whereas the SRMD age of onset in two cases was 17, while it was seen during early childhood and childhood in 20 cases [7].

The current stereotypical movements manifesting during the patient's sleep were in the form of high-amplitude convulsions involving the limbs and the head. Our patient also had daytime sleepiness, and when he failed to remember the dreams he had at night, he was diagnosed with SRMD, having been left out of the REM sleep behavior disorder category. Apart from the fact that SRMD is a disease which does not require treatment as it remits spontaneously until the age of four, psychotherapy, benzodiazepines or tricyclic antidepressants can be considered as the treatment options in serious/severe cases [1,8,9]. Our patient had also taken advantage of gabapentin. While the association of SRMD with several psychiatric diseases was mentioned, no such association with cancer has been reported to date [10]. Our patient's adult-onset SRMD was evaluated as a complication of the known lung cancer. The fact that the mass lesion in the lung of our patient invaded the T3-T4 vertebrae, the possibility of radiculopathy, and a lesion in the posterior portion of the spinal cord are considered to be responsible for this clinical picture.

Conclusion

The neurological symptoms, such as paraneoplastic causes, drug side-effects, brain metastases, and spinal cord stresses are frequently seen in cancer patients. Here, attention is particularly drawn to the fact that possible neurological clinical pictures in the cases with cancer do not only result from the above mentioned causes but also from other neuropathological ones. SRMD is a sleep disorder, which is usually seen during childhood and which rarely continues to progress until adulthood. The case we have presented in this article is the first one featuring adult-onset SRMD which exhibits an association with cancer.

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