

Opsoclonomyoclonic Syndrome Revealing a Neuroblastoma in an Infant: A Rare and Unusual Case Report

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ABSTRACT

Introduction Opsoclonomyoclonic syndrome (OMS) is an uncommon childhood illness. Opsoclonus, myoclonus, ataxia, and behavioral abnormalities are all symptoms. Long-term prognosis is dismal, however the introduction of novel immunotherapy regimens may improve it. **Case report** We present the case of an 18-month-old previously healthy newborn who was hospitalised for gait problem and widespread tremors that lasted four days, along with food vomiting and photophobia. A conscious patient with a 38°C temperature, a cerebellar syndrome, and aberrant palpebral and ocular myoclonic movements led us to suspect an opsoclonomyoclonic syndrome. The biological examination and brain CT were both normal, however the cerebral-medullary MRI revealed a signal anomaly. Given the close link between OMS and neuroblastoma, a thoraco-abdominal CT scan revealed a neuroblastoma. The child was transported to the paediatric oncology department, where he received surgical resection with chemotherapy, as well as corticosteroids, clonazepam, and antiepileptic medication. Oncologically and neurologically, the evolution was favorable. **Conclusion :** Although OMS is an uncommon condition in children, the fact that it has a significant connection with neuroblastoma allowed us

to identify the diagnosis and begin therapy early, resulting in a positive patient outcome.

Keywords: opsoclonomyoclonic syndrome, neuroblastoma, ataxia, child, dancing eye syndrome

INTRODUCTION

Opsoclonus myoclonus syndrome is an uncommon childhood condition. The clinical diagnosis is based on the presence of at least three of the following symptoms: opsoclonus, myoclonus, ataxia, irritability, and sleep disruption [1]. Because not all of the characteristic signs may be present at first, the diagnosis may be delayed for several weeks or months after the first symptoms arise. [2]

At least half of all afflicted children have an underlying neuroblastoma (NB), and OMS emerges as a paraneoplastic condition in 2-3% of all NB children [3].

In cases with secondary neuroblastoma, treatment consists of immunosuppressants, immunomodulators, and tumor excision. Depending on the origin, initial severity of symptoms, and speed of treatment, 70-80% of individuals may have neurological sequelae. [4]

CASE REPORT

We present the case of an 18-month-old child from a non-consanguineous marriage with no specific pathological history who was admitted to our health centre for a movement disorder associated with generalized tremors that included the neck, upper limbs, and lower limbs that had been evolving for four days, as well as food vomiting and photophobia, all of which were occurring in the context of a fever of 38 C° and an altered general state.

The patient was found to be aware, hemodynamically and respiratorily stable, with normal conjunctiva, normochardic at 90bpm, eupneic at 29bpm, febrile at 38C°, and a normal head circumference of 46cm.

The neurological examination revealed a cerebellar syndrome with tremors in all four limbs, the head and neck, difficulty standing and walking, and the presence of bilateral nystagmus, as well as abnormal palpebral and ocular myoclonic movement patterns with generalized hypotonia, sharp osteotendinous reflexes, and a negative Babinski sign. The remainder of the clinical evaluation was uneventful. Based on this clinical presentation, a cerebral CT scan was ordered, which was normal; an infectious work-up was negative: CRP was 0.3; and the lumbar puncture was normal.

A blood work revealed that the white count was accurate at 10,000/ul and that the patient had moderate microcytic hypochromic anemia (haemoglobin 11.7g/dl / GMV: 73.5fl / MCHR: 23.1pg).

The ionogram was correct: natremia was 137, kalemia was 5, and renal function was normal (urea was 0.26 and creatinine was 2). Normal liver function exams: AST 12, ALT 46, and lactate and ammonia levels.

An EEG detected a sharp and delayed trace, suggesting epileptic encephalopathy, and the patient was started on clonazepam (rivotril) 3 drops twice a day alongside antiepileptic medication.

A brain MRI was performed, which revealed an aberrant signal in the subcortical white matter (Figure 1), and the patient was treated by a three-day intravenous Methylprednisolone.

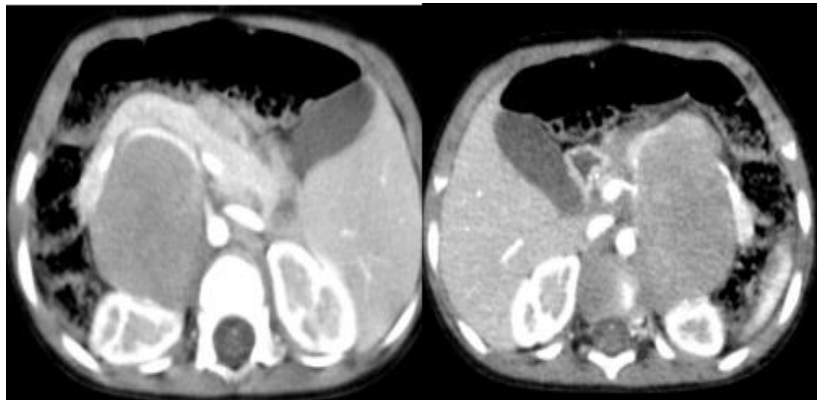


Figure 2: Thoracoabdominal CT scan showing a locally infiltrating retroperitoneal tumour process centred on the adrenal gland with characteristics of neuroblastoma.

The diagnosis of neuroblastoma with neurological manifestations was maintained, and the child was sent to the paediatric oncology department for further treatment, where he had surgical removal of the neuroblastoma, chemotherapy, and corticosteroid medication. Both the neurological and oncological elements of the evolution improved.

DISCUSSION

Ossoclonus myoclonus syndrome (OMS), often known as dancing eye syndrome owing to the erratic and fast eye movements, is a rare immune-mediated condition that affects both children and adults [5].

The epidemiological features of OMS differ between research and nations [4]. Its prevalence in Japan is estimated to be 0.27-0.40 cases per million children [6]. In the United States of America (USA) and the United Kingdom (UK), the yearly occurrences of OMS are 0.03 and 0.18 per million of the total population, respectively [4]. It often happens during the first and third years of life, with an average of 18-22 months. OMS was discovered in our patient at the age of 18 months. Opsoclonus myoclonus syndrome can be idiopathic, parainfectious, or paraneoplastic [6].

In 30-50% of cases, infectious episodes have a parainfectious etiology. These include gastrointestinal symptoms, upper respiratory tract involvement, and fever. HIV, mumps, CMV, EBV, Coxsackie B virus, West Nile virus, and rubella are the most common infectious agents [4]. In children, paraneoplastic OMS is usually associated with neuroblastoma, which is detected in up to 50% of cases and usually precedes clinical detection of the tumor, and 1-2% of neuroblastomas are associated with OMS [6], but it is thought to be autoimmune in origin due to the presence of autoantibodies described in adults and children [3]. An associated neuroblastoma was found in 22 (64%) of 34 children with OMS in a retrospective evaluation of

patients treated in two large paediatric oncology programs and two large neurology centers in France [5]. In our patient's case, the opsoclonomyoclonic syndrome is of paraneoplastic origin as there was an associated neuroblastoma.

At the Advances in Neuroblastoma Research meeting in Genoa, Italy, in 2004, a working group recommended that three of the following criteria be present to diagnose neuroblastoma with OMS. 1. Abnormal eye movements (opsoclonus): tend to occur in bursts and can sometimes be triggered by a change in gaze or by light; 2. Myoclonus: multifocal muscle jerks; 3. Ataxia: includes both trunk and limb ataxia, and may result in an inability to walk in the acute stage; 4. Irritability or sleep disorders; 5. presence of neuroblastoma [5]

In the majority of cases, OMS precedes clinical detection of the tumour; however, in some cases, OMS occurs even after treatment of a neuroblastoma [6]

Given the close link between OMS and neuroblastoma in children, an imaging investigation should be conducted to identify and characterize a primary tumor [3]. Urine catecholamine testing is a dependable and low-cost approach of tracking tumor disease. However, only 10% of neuroblastomas generate catecholamines. The clinical presentation of the symptomatology in our investigation fitted these criteria, with the patient having ataxia, aberrant palpebral and ocular myoclonic movements, and irritability. As in the literature, symptoms of OMS preceded the clinical discovery of the tumor in issue, a neuroblastoma discovered on imaging. Early diagnosis and immunosuppressive medication are critical for a positive result and greatly lower the likelihood of long-term neurological consequences. Neuroblastoma surgical resection temporarily alleviates symptoms; however, they seldom vanish entirely until immunosuppressive medication is initiated. [3] Corticosteroids or ACTH analogues are being used as long-term therapy [7]. In 80% of patients, symptomatic therapy leads in clinical improvement within 2 weeks. The response with ACTH appears to be more successful than with steroids, and some authors propose adding rituximab to the treatment regimen as soon as possible in situations with late diagnosis or severe symptoms [3].

Some children with OMS have received intravenous immunoglobulin, with varying results. Klein and colleagues observed that IV Ig therapy had a positive effect on neurological symptoms in six children with prednisolone relapses or dependency [6]. Other authors claim that a comprehensive treatment that involves standard chemotherapy in addition to resection and immunosuppression produces superior long-term outcomes in the neurological sequelae of OMS. If the initial tumor inquiry is negative, it is also advised that it be done every 6 months for the next 5 years, especially if the evolution is not favorable despite early and well established therapy. There is currently no established pharmacological therapy for ataxia. Myoclonus is less debilitating in OMS than other symptoms. Children, on the other hand, require rigorous physiotherapy and neuropsychological instruction to address learning issues. Various therapies for opsoclonus have been offered, however all relevant reports comprise just single instances or tiny case series. Clonazepam, chlormethiazole, gabapentin, and topiramate may help improving opsoclonus [6]

The goal of treatment is to reduce neurological symptoms while also improving cognitive problems (learning and behavior) and preventing mental retardation [6]. Neurological

sequelae may occur in 70-80% of cases, including cognitive, visual, motor, praxis, linguistic, and behavioral impairments [3].

We describe an OMS instance in an otherwise healthy 18-month-old kid. The youngster reacted favorably both oncologically (surgical resection and chemotherapy) and neurologically following treatment with steroids and clonazepam after the diagnosis of neurological picture and basic neuroblastoma was obtained. Interestingly, children with neuroblastoma and OMS have a better prognosis for their neuroblastoma as they are usually at more limited tumour stages and the tumours are usually better differentiated [7]. However, the prognosis for OMS itself is poor, and most children remain mentally retarded or have severe learning difficulties, although the main neurological symptoms improve [6]

Rudnick and colleagues found that no patient with neuroblastoma and OMS had stage IV illness, and only two of 21 patients with neuroblastoma and OMS had metastatic disease. However, more than one-third of neuroblastoma patients did not have OMS. [6]

CONCLUSION

This case study focuses on the relationship between neuroblastoma and opsoclonomyoclonic syndrome, which is an uncommon phenomenon in paediatrics; the diagnosis is typically found late since neurological symptoms frequently precede tumor identification. In our situation, the diagnosis was discovered after three weeks, allowing for early therapy and, as a result, an excellent therapeutic success.

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