IJBC 2013;6(1): 55-57

Neuroblastoma Associated with Bilateral Ptosis: Report of a Rare Condition

Goudarzi Pour K [1]*, Eshghi P [1], Aghakhani R [2], Askari Reza A [1], Nejat Mahmud P [1]

1. Pediatric congenital hematologic disorders research center, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
2. Mofid Children's Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

***Corresponding Author:** Goudarzi Pour K, Email:*

Submitted: 23-06-2013 , Accepted: 21-09-2013

Abstract

Neuroblastoma is a common tumor in pediatric cancer and which might present with usual or unusual clinical features. One of the rare clinical finding of neuroblastoma is paraneoplastic syndromes.

We report a two year-old girl with presentation of bilateral ptosis and abdominal pain which was diagnosed as having neuroblastoma. Our case is a very rare case of neuroblastoma accompanied by bilateral ptosis as a paraneoplastic syndrome .

Keywords: Neuroblastoma, paraneoplastic syndrome, bilateral, ptosis.

Introduction

Paraneoplastic syndromes are rare clinical findings in neuroblastoma. The signs and symptoms of paraneoplastic syndrome are different. Opsoclonus-myoclonus is a paraneoplastic syndrome that occurs in 2-3% of children with neuroblastoma and is characterized by myoclonic jerking, dancing random eye movements, and ataxia[1] .

Other paraneoplastic effects of neuroblastoma have been described including miosis; Horner syndrome; oculomotor and abducens nerve paresis; facial paresis, recurrent laryngeal, phrenic paralysis; seizures; choreoathetosis; and retardation [2,3]. Bilateral ptosis is a very rare finding in neuroblastoma. In this report we describe a child with neuroblastoma associated with bilateral ptosis.

Report of the Case

A two year-old girl was admitted to our center with bilateral ptosis and ataxia for two weeks. She had unremarkable drug and family history and her growth and development were appropriate for her age. She also had urine retention and fecal soiling. On physical examination the abdomen was distended and neurologic evaluation revealed bilateral ptosis, ataxia, normal deep tendon reflexes and no sensory loss.

Paraclinical studies results were as follow: WBC: 8800/dL, Plt: 609000/dl, Urinary VMA: 61mg/dL. Bone marrow aspiration was hypercellular without blast. Abdominal ultra sonography and CT scan revealed a heterogeneous and calcified retroperitoneal mass; 12 cm in greatest diameter, which was located in the left suprarenal region and crossed the midline. The mass compressed the superior lobe of the left kidney.

The patient underwent surgical partial removal of the tumor and pathologic report showed unfavorable neuroblastoma stage III. Immunohistochemistry studies were not performed and cytogenetic study showed N.myc amplification more than 20 copy/N.

Chemotherapy with cyclophosphamide, adriamycin and vincristine was started for the patient and she was followed untill she continued the treatment on her family desire in her hometown and her disease is controlled.

Discussion

The term "paraneoplastic syndromes" refers to damage to organs or tissues that are isolated from the origin of a malignant neoplasm or its metastases. Paraneoplastic syndromes can affect most organs and tissues. Widely known examples include cancer cachexia, hypercalcemia, Cushing's syndrome, and Trousseau's syndrome. Most of these paraneoplastic syndromes occur because the tumor

[Downloaded from ijbc.ir on 2026-11-28]

provides substances that mimic normal hormones or that interfere with circulating proteins. A few paraneoplastic neurologic disorders are caused by similar mechanisms (e.g., carcinoid myopathy and encephalopathy). However, most paraneoplastic neurologic disorders are immune-mediated [4,5,6,7,8].

The symptoms and signs of paraneoplastic syndrome are diverse, but certain features are common. The neurologic disorder usually appears before the cancer has been identified. In many instances an initial search for cancer is unrewarding; the tumor is found months or even a few years after the appearance of the neurologic syndrome [9]. Paraneoplastic disorders can involve both central and peripheral nervous systems. The symptoms of these disorders may be caused by the encouragement of different parts of the nervous system, thus, inducing different manifestations [10]. The mechanisms of neurologic manifestations caused by paraneoplastic syndrome are not well understood. The leading theory indicates the stimulation of an autoimmune response because of the presence of antigens expressed by the tumor as well as in some types of neurons [11].

Bilateral ptosis and muscle weakness are presumptive signs for a group of disorders, including neuromuscular disorders such as myasthenic syndromes, myopathies, and mitochondrial diseases. Several well-characterized autoantibodies such as anti-Purkinje cell antibodies (anti-Yo), anti-Tr antibodies, and anti-Hu have been identified in some patients with paraneoplastic neurologic diseases, and a subset of these antibodies have been linked with characteristic neuro-ophthalmologic findings [12,13] .

The period between the start of opsoclonus-myoclonus and the diagnosis of neuroblastoma is different. The median duration of opsoclonus-myoclonus before the diagnosis of neuroblastoma was 6 weeks (6 days to 17 months) in a Pediatric Oncology Group study [14]. The Children's Cancer Group identified one patient who presented with opsoclonus-myoclonus more than 1 year before a neuroblastoma was recognized [15].

Recent reports have indicated that 90% of patients with opsoclonus-myoclonus were without metastases at diagnosis, compared to 40–50% among non-opsoclonus-myoclonus syndrome patients. Tumor biology, including MYCN copy number and Shimada histopathologic classification are usually favorable in patients with opsoclonus-myoclonus syndrome, which correlates with the best survival rate found in patients with opsoclonus-myoclonus syndrome and neuroblastoma, even when survival analysis is stratified by age at diagnosis and step [15,16].

Lambert-Eaton myasthenic syndrome is a presynaptic autoimmune disorder of the neuromuscular transmission. The disease has neurologic manifestations such as autonomic dysfunction, muscular weakness, and decreased tendon reflexes. These signs may be the presenting feature of an otherwise undiagnosed tumor. Rosseing et al. have described a case of a 13 month girl with Lambert-Eaton myasthenic syndrome and neuroblastoma [10]. Tatli et al., reported the case of a 28 month girl with presentation of bilateral ptosis 3 months prior to diagnosis of neuroblastoma [17].

Sometimes paraneoplastic syndromes start after vaccination in neuroblastic patients 18. Regardless of immunosuppressive treatment for the acute symptoms of opsoclonus-myoclonus syndrome, many children have major neurological and developmental deficit [15,19,20].

Our case is one of the rarest cases of neuroblastoma accompanied with paraneoplastic syndrome and in pervious literatures; there is just one report of a similar case [17].

According to our finding about paraneoplastic syndrome and underling neoplasm some points should be considered; first, paraneoplastic syndrome may be accompanied with malignancies and this is more important especially in children, because of their ambiguous history and symptoms. Second, paraneoplastic syndrome and malignancy may occur unsimultaneously, and one of them may occur earlier or later, thus ruling out malignancies using clinical and paraclinical investigations at the onset of paraneoplastic syndrome is not reasonable and these investigations should be repeated on appropriate intervals. Third, despite usual accompaniment of paraneoplastic syndrome with favorable neuroblastoma, our case was diagnosed with an unfavorable one. Because of the rarity of bilateral ptosis with neuroblastoma, it is difficult to judge about accompaniment of bilateral ptosis with unfavorable neuroblastoma and more detailed studies should be performed.

Conclusion

We suggest that pediatricians and pediatric neurologists consider searching intensively for a neoplasm or paraneoplastic syndrome when newly developing, persisting, or unexplained neurologic

[Downloaded from ijbc.ir on 2026-11-28]

signs are found among children.

References

1. Matthay KK. Neuroblastoma: a clinical challenge and biologic puzzle. CA Cancer J Clin. 1995;45(3):179-92.
2. Donohue JP, Garrett RA, Baehner RL, Thomas MH. The multiple manifestations of neuroblastoma. J Urol. 1974;111(2):260-4.
3. Bale JF, Bray PF. Convulsions with an occult neural-crest tumor. N Engl J Med. 1979;301(10):555-6.
4. Inui A. Cancer anorexia-cachexia syndrome: current issues in research and management. CA Cancer J Clin. 2002;52(2):72-91.
5. Luh JY, Han ES, Simmons JR, Whitehead RP. Poorly differentiated colon carcinoma with neuroendocrine features presenting with hypercalcemia and cutaneous metastases: case report and review of the literature. Am J Clin Oncol. 2002;25(2):160-3.
6. Mansi L, Rambaldi PF, Panza N, Esposito D, Esposito V, Pastore V. Diagnosis and radioguided surgery with 111In-pentetreotide in a patient with paraneoplastic Cushing's syndrome due to a bronchial carcinoid. Eur J Endocrinol. 1997;137(6):688-90.
7. Denko NC, Giaccia AJ. Tumor hypoxia, the physiological link between Trousseau's syndrome (carcinoma-induced coagulopathy) and metastasis. Cancer Res. 2001;61(3):795-8.
8. Siu LL, Chapman W, Moore MJ. Use of the somatostatin analogue octreotide acetate in the treatment of encephalopathy associated with carcinoid tumor. Case report. Am J Clin Oncol. 1997;20(6):558-61.
9. Darnell RB, Posner JB. Paraneoplastic syndromes involving the nervous system. N Engl J Med. 2003;349(16):1543-54.
10. de Buys Roessingh AS, Loriot MH, Wiesenauer C, Lallier M. Lambert-Eaton myasthenic syndrome revealing an abdominal neuroblastoma. J Pediatr Surg. 2009;44(8):E5-7.
11. Dropcho EJ. Update on paraneoplastic syndromes. Curr Opin Neurol. 2005;18(3):331-6.
12. Jacobson DM. Paraneoplastic disease of neuro-ophthalmologic interest. In: Miller NR, Newman NJ, eds. Walsh and Hoyt's clinical neuro-ophthalmology, 5th ed. Baltimore: Williams & Wilkins, 1998:2497-551.
13. Bennett JL, Galetta SL, Frohman LP, Mourelatos Z, Gultekin SH, Dalmau JO, et al. Neuro-ophthalmologic manifestations of a paraneoplastic syndrome and testicular carcinoma. Neurology. 1999;52(4):864-7.
14. Russo C, Cohn SL, Petruzzi MJ, de Alarcon PA. Long-term neurologic outcome in children with opsoclonus-myoclonus associated with neuroblastoma: a report from the Pediatric Oncology Group. Med Pediatr Oncol. 1997;28(4):284-8.
15. Rudnick E, Khakoo Y, Antunes NL, Seeger RC, Brodeur GM, Shimada H, Opsoclonus-myoclonus-ataxia syndrome in neuroblastoma: clinical outcome and antineuronal antibodies-a report from the Children's Cancer Group Study. Med Pediatr Oncol. 2001;36(6):612-22.
16. Altman AJ, Baehner RL. Favorable prognosis for survival in children with coincident opso-myoclonus and neuroblastoma. Cancer. 1976;37(2):846-52.
17. Tatli B, Saribeyoğlu ET, Aydinli N, Calişkan M, Anak S. Neuroblastoma: an unusual presentation with bilateral ptosis. Pediatr Neurol. 2004;30(4):284-6.
18. Stefanowicz J, Izycka-Swieszewska E, Drozyńska E, Pienczk J, Połczyńska K, Czauderna P, et al. Neuroblastoma and opsoclonus-myoclonus-ataxia syndrome--clinical and pathological characteristics. Folia Neuropathol. 2008;46(3):176-85.
19. Koh PS, Raffensperger JG, Berry S, Larsen MB, Johnstone HS, Chou P, et al. Long-term outcome in children with opsoclonus-myoclonus and ataxia and coincident neuroblastoma. J Pediatr. 1994;125(5 Pt 1):712-6.
20. Hayward K, Jeremy RJ, Jenkins S, Barkovich AJ, Gultekin SH, Kramer J, et al. Long-term neurobehavioral outcomes in children with neuroblastoma and opsoclonus-myoclonus-ataxia syndrome: relationship to MRI findings and anti-neuronal antibodies. J Pediatr. 2001;139(4):552-9.

[Downloaded from ijbc.ir on 2026-11-28]