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Case Report / Olgu Sunumu

Morning Glory Syndrome and Autism: A Case Report

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ABSTRACT

Morning glory syndrome and autism: a case report

Autism is a developmental neuropsychiatric disorder that starts in early years of life, lasts lifelong, and characterized by the triad of impaired social skills, delayed speech, and repetitive or unusual behaviours. Morning glory syndrome (MGS) is a congenital anomaly of the optic disc, first described in 1970 and named by Kindler due to a resemblance to the flower of the same name. Congenital anomalies are more common in autistics compared to normal population. Among all types of congenital anomalies, the frequency of autism is higher with brain and/or eye anomalies. In this paper, we reported a 2-year-old female, who was diagnosed to have morning glory syndrome when she was 14-months old and admitted to our clinic because of delayed speech and lack of communication. Although congenital eye anomalies and autism comorbidity is high, there is only one case diagnosed to have MGS with autism reported in the literature. We aimed to report this case because of the difference in visual impairment than previous case and to impress on the relationship between MGS and autism, which stems from the early development phase of embryological life, when there is increased sensitivity for genetic and environmental factors.

Key words: Autism, child, morning glory syndrome

ÖZET

Morning glory sendromu ve otizm: Bir olgu sunumu

Otizm yaşamın erken dönemlerinde başlayan ve yaşam boyu süren; sosyal becerilerde bozulma, konuşma gecikmesi ve tekrarlayıcı, olağandışı davranışlarla karakterize gelişimsel nöropskiyatrik bir bozukluktur. Morning glory sendromu (MGS); ilk olarak 1970 yılında Kindler tarafından tariflenmiş ve sabah sefası adlı çiçeğe benzemesi nedeniyle bu isimle adlandırılmış, optik diskin konjenital bir anomalisidir. Konjenital anomalilerde otizm normal popülasyona göre daha sık görülmekle birlikte, bu birliktelik özellikle göz ve beyin anomalilerinde daha fazla görülmektedir. Bu yazıda, 14 aylıkken MGS tanısı almış kliniğimize konuşma gecikmesi ve iletişim eksikliği nedeniyle anne babası tarafından getirilen 2 yaşında bir kız çocuğu sunulacaktır. Bu olgu, konjenital göz anomalileri ve otizm sık birliktelik göstermesine rağmen literatürde MGS ve otizm tanısı olan sadece bir olgu bulunması, görme bozukluğunun şiddetli olmaması yönüyle farklı olması ve her iki hastalığın da genetik ve çevresel faktörlere hassas olan embriyolojik gelişimin erken döneminde ortaya çıkması nedeniyle bildirilmiştir.

Anahtar kelimeler: Otizm, çocuk, morning glory sendromu

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INTRODUCTION

Autism is a developmental neuropsychiatric disorder that starts early in life, can last lifelong and characterized by the triad of impaired social skills, delayed speech and repetitive or unusual behaviours (1). Several factors take place in the etiology of autism. Genetic mechanisms have an important place among these factors (2). Therefore, lots of genetic syndromes and congenital anomalies can be seen with autism. Schendel et al., (3) found that congenital anomalies have a two-fold increased incidence among children with the diagnosis of autism. However, autism frequency was different between these congenital anomalies. It was found to be higher in those including brain and/or eye anomalies. MGS is a congenital anomaly of the optic disc. It is an optic nerve dysplasia characterized by chorioretinal pigmentary changes and subretinal fibroglial tissue which surrounds enlarged funnel-shaped optic nerve head with central fibroglial tissue and it was first described in 1970 by Kindler (4) and named after it's resemblance to the flower of the

same name. MGS is mostly seen isolated and bilateral lesions are rare (5). In embryological life, optic vesicles are derived from forebrain neural crest cells during the fourth week of gestation. Formation of the sclera, retinal vessels and choroid happens after interaction of optic vesicles with local mesoderm. In the morning glory syndrome, there may be many variations of atypical dysplastic optical disc (6). Although congenital eye anomalies and autism comorbidity is high, there is only one case diagnosed to have MGS with autism reported in the literature. Therefore, we aimed to report this case because of the difference in visual impairment than previous case and to impress on the relationship between MGS and autism, which stems from the early development phase of embryological life when there is increased sensitivity for genetic and environmental factors.

CASE

Y.E.A. is a 2-year-old female child. She was referred to our clinic with lack of speech. Her anamnesis revealed that she had not been playing with her peers, had not been responding back, when her name was called and was unable to say meaningful words except "mother" and had been extremely interested in spinning objects. According to her medical history, when she was 11 months old, she was diagnosed to have MGS after fundus examination under general anesthesia when she was admitted to ophthalmology outpatient clinic with the complaints of eye deviation. There was no pathology in renal ultrasound done for the differential diagnosis of renal coloboma syndrome. One month before admission to our clinic, she was hospitalized for one week due to immune thrombocytopenic purpura (ITP) and her treatment was stopped in the follow up. Her complete blood count was within normal limits. Mental status examination of the patient revealed that she was not paying attention to basic verbal instructions, she was avoiding from eye-to-eye contact, her mimes were restricted even after we and parents made effort, she did not react when her mother left the room and she was lacking social smiling. She was diagnosed to have autism according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Child Autism Rating Scale (CARS) and Ankara Developmental Screening Inventory (ADSI) were applied to the patient in order to assess her autism symptoms and cognitive development level (7-9). She had moderate autism with a CARS score of 36 and ADSI revealed significant delay in all areas. The patient was consulted with Pediatric Department, Otorhinolaryngology Department and Ophthalmology Department in order to research further comorbid anomalies and differential diagnosis, especially CHARGE (coloboma, heart malformations, choanal atresia, retardation of growth and development, genital anomalies, ear and hearing abnormalities), hearing impairment. The results of cranial MRI and abdominal ultrasound were normal and there was no abnormality in her audiological evaluation. After echocardiography, two ostium secundum atrial septal defects in 3mm diameters were detected and follow-up control after 1 year was suggested. Because of the autistic symptoms, patient was suggested to go to kindergarden for three months and called for outpatient control after three months. Special education support with kindergarden was suggested to the parents after her autism symptoms persisted in her control mental status examination. CARS score was 31 after six months, which shows moderate degree autism. Follow-up with 3-months intervals at outpatient clinic was suggested.

DISCUSSION

Autism is a neurodevelopmental disorder which various mechanisms play role in the etiology and congenital anomalies may often be associated than normal population (3,10,11). MGS is a congenital anomaly of eyes characterized with optic disc dysplasia. Children with optic nerve dysplasia are at increased risk of being in clinical autism spectrum disorder and they may have social, communicational or repetitive/restrictive behavioral difficulties (12).

In the literature, MGS and autism association have been rarely reported. Nawratzki et al. (13) reported a case, in which optic disc dysplasia was bilateral so

visual impairment was severe. In our case, optic disc dysplasia was unilateral without significantly impaired vision. Autism disorders are more common in patients with more severe visual impairment and their social, communicational and repetitive / restrictive behavioral difficulties were more severe than those with milder vision impairment (14). In our case, visual impairment was not severe but there were moderate autism symptoms. Moreover, in the first case, cranial CT revealed occult basal encephalocele and absence of the corpus callosum with midline brain lesions whereas in our case there were no abnormalities found in cranial MRI. In our patient, there was co-occurrence with ITP but there were no hematological problems in the previous case.

MGS should be differentiated from other congenital anomalies which shows optic nerve dysplasia and multi-systemic anomalies because MGS is mostly seen isolated with unilateral optic nerve dysplasia. We made differential diagnosis with Renal Coloboma Syndrome and CHARGE. In Renal Coloboma Syndrome, there is renal hypodysplasia with optic nerve dysplasia. Renal ultrasound scan showed no anomalies in kidneys. Echocardiography for differential diagnosis with CHARGE revealed ostium secundum atrial septal defect. But abdominal ultrasound for genital anomalies and Otorhinolaryngology Department consultation for ear and hearing abnormalities and choanal atresia, reported no anomalies. Otorhinolaryngology Department and Ophthalmology Department consultations for the differential diagnosis of autism reported no impairments related to hearing or vision. Also significant delay in verbal cognition and social development and mild impairments in other areas suggested pervasive developmental disorder in diagnosis. Although developmental delay is common in autism, verbal cognition and social developmental impairment is more common. Reactive Attachment Disorder is excluded from differential diagnosis because there was no improvement in communication even when supported with enriched environment.

There are many researches in the literature showing autism and MGS originate from early periods of embryological life (6,15). This period is very important because of its increased sensitivity for genetic and environmental factors. In the literature search, we found that PAX6 mutation as genetical factor and thalidomide as environmental factor were held responsible for both disorders. Azuma et al. (16) found PAX6 gene mutation in some of the MGS patients. In our patient, because of the financial restrictions of the parents, we were not able to study PAX6 gene mutation. Davis et al. (17) found that PAX6 mutations were associated with developmental anomalies including autism, mental retardation and aggressive phenotypes and they suggested that PAX6 might be among one of the candidate genes for autism. PAX6 is one of the many essential regulatory genes that effect eye, central nervous system, pituitary, and pancreatic development and it can also be involved in early neural development (18). The studies of thalidomide defects confirm that the vulnerable stage of embryologic development, early organogenesis, take place between days 20 and 40 after fertilization when ocular anomalies and autism can arise (19,20). In our case, there was no exposure to thalidomide during pregnancy.

As a result, although it is known that autism spectrum disorder is more common in patients with severe vision impairment; clinicians should try to keep in mind that patients without severe visual impairment may also have comorbid autism spectrum disorders in order to have chance for early diagnosis and necessary interventions. We think that there is a need for more studies about autism spectrum disorders carried out in patients without severe vision impairment. Moreover, studies regarding to genetic and environmental factors may contribute to a better understanding of the pathogenesis of autism and need for future research.

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