

## Case Report

## Congenital mirror movement disorder

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**ABSTRACT**

The mirror movement disorder is characterized by involuntary movements on one side of the body mirroring voluntary movements on the opposite side. In general, the movements at the distal aspect of the upper extremity are observed on the other side of the body. The condition has been reported to concur with congenital cerebral malformations. In rare cases, permanent mirror movements occur after birth without any pathology in the corpus callosum. This condition is called the congenital mirror movement disorder and it usually occurs without neurological symptoms. In our study, the clinical symptoms of the rarely observed congenital mirror movement disorder are discussed in the light of the literature.

**KEY WORDS:** Congenital; Mirror movement disorder; Transcallosal.

**INTRODUCTION**

The mirror movement disorder is characterized by involuntary movements on one side of the body mirroring voluntary movements on the opposite side. In general, the movements at the distal aspect of the upper extremity are observed on the other side of the body.<sup>1</sup> The condition has been reported to concur with congenital cerebral malformations. The majority of cerebral malformations occur due to disorders of cortical organisation and neuronal migration disorders.<sup>2,3</sup> In rare cases, permanent mirror movements occur after birth without any pathology in the corpus callosum. This condition is called the congenital mirror movement disorder and it usually occurs without neurological symptoms.<sup>4</sup> In our study, the clinical symptoms of the rarely observed congenital mirror movement disorder are discussed in the light of the literature.

**CASE**

Sixteen-year-old female patient with right-hand dominance was admitted to our clinic with the complaint of clumsiness since her childhood. She had these complaints since her birth according to the information received from the mother. On family history, her parents and other two sibling were healthy. When she moved her right hand, it seemed to be moving her left hand as well and it led to some minor accidents in her daily life. When she gives her attention to another point, we have observed that the movements that she made with her right hand were also repeated with her left hand and we learned that this has occurred since her birth. She did not have such features in her history as well as there was no family history of this disease. Besides, she did also not use any medicines. Hemogram, biochemistry and hormone profiles were normal and she had clear, cooperative and oriented consciousness in her neurological examination. Meningeal irritation symptoms were not observed. The cranial nerve examination was normal. Muscle strength was complete in 5/5 distal limb and proximal muscles. Deep tendon reflexes were normoactive and there were no pathological reflexes. When we asked the patient to open and close her right hand voluntarily, we observed that she tried to do the same action in her left hand involuntarily.

The movements were considered to be more prominent in the fingers. The cranial magnetic resonance imaging (MRI) of the patient was considered as normal. Visual evoked potentials were within normal limits for both eyes (Right:104, Left 106). The follow-up continues in our clinic.

## DISCUSSION

The mirror movement disorder involves involuntary movements on one side of the body mirroring voluntary movements on the other.<sup>1</sup> An alternative hypothesis explaining the mechanism of the mirror movement disorder is the abnormal development of the ipsilateral corticospinal tract.<sup>5</sup> Another mechanism is the disruption of the inhibition of the transmission in the corpus callosum. The myelination of the fibers in the corpus callosum is completed around the age of 10-13. Until this age, the transcallosal pathways cannot perform their full function. Consequently, only an incomplete inhibition is achieved and mirror movements occur on the opposite side of the voluntary movements.<sup>6</sup> In our patient, mirror movements in the left hand were observed when she was moving his/her right hand. His/her radiological imaging results were normal and the symptoms were present since birth. Therefore, congenital mirror movement disorder was considered in the diagnosis. The probable mechanism of the mirror movement disorder in our patient was considered to be an incomplete transcallosal inhibition or a misalignment of the interhemispheric commissural fibers in the corpus callosum. Studies conducted on a limited number of patients have pointed out that certain mutations may lead to this condition especially in case of an autosomal transmission of the congenital mirror movement disorder.<sup>7</sup> The treatment options of the congenital mirror movement disorder are limited. Exercises helping the patient's adaptation are recommended.<sup>8</sup>

In our case report, a patient with congenital mirror movement disorder has been discussed in the light of the patient's video and the related literature, and the etiological mechanisms have been reviewed.

## DISCLOSURE

No specific funding was received for this work. The authors declare that there are no conflicts of interest relevant to this work.

The authors declare that there are no additional disclosures to report.

- 1) Research project: Huseyin Buyukgol. Conception, Faik Ilik. Organization, Hatice Kose Özlece. Execution
- 2) Statistical Analysis: Fatih Kayhan. Design, Huseyin Buyukgol. Execution, Murat Gonen Review and Critique
- 3) Manuscript: Faik Ilik. Writing of the first draft, Murat Gonen. Review and Critique.

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