



Stress Induced Oculogyric Crisis in a Young Girl.

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Letter to the Editor

Dear editor

A 14-year-old girl presented to the Neurology department of a tertiary care hospital with sustained, conjugate upward deviation of the eyes and mild cervical dystonia. Symptoms had started 30 minutes before the presentation when the patient was studying for a high risks exam. The patient was well-oriented and responded adequately to all questions but was significantly distressed and scared by the involuntary symptoms. Physical examination, including tone and reflexes, was normal in both upper and lower extremities. Ocular examination was limited by the nature of symptoms and eye positioning, but the pupils were normal bilaterally. Bilateral upward and rightward deviation of eyes was prominent along with some degree of stiffness of the neck muscles, indicating mild dystonia. There was no personal or family history of epilepsy or any psychiatric or neurologic disorder. The parents described their kid as a normal child with no medical history till date. Both the patient and her parents firmly denied the usage of any drugs (including antipsychotics, antiemetics and antidepressants) except acetaminophen for occasional headaches. A probable diagnosis of Oculogyric Crisis (OGC) was made on clinical grounds, with stat administration of 5 mg oral procyclidine. Symptoms started to wane ten minutes after the first dose with complete resolution after 30 minutes.

The patient was discharged the next day with instructions to come back in case of similar or any seizure-like symptoms. Six months into follow-up, the patient and her parents have not complained of any symptoms. An oculogyric crisis is a type of dystonic movement disorder characterized by either sustained or paroxysmal upward deviation of both eyes and is thought to occur because of an imbalance between dopamine and acetylcholine in the nigrostriatal pathway [1]. Two other differentials on the list were frontal lobe seizures and conversion disorder. Absence of a clear clinical picture and history and a normal Electroencephalogram (EEG) made seizures less likely. A conversion disorder is possible but is less likely given the rapid response to treatment, no psychiatric history and presence of an alternative diagnosis. Considering the sequence of events, we hypothesized that stress-induced alterations in dopamine levels may lead to an oculogyric crisis. To the best of our knowledge, this is the first case of a purely stress-induced oculogyric crisis. Although many cases in the literature have described the role of emotional stimuli in causing OGC in patients already on neuroleptic drugs, no case has yet been reported in a patient without known drug or psychiatric history [2].

The scientific evidence for this observation is sound as the relationship between stress and dopamine levels has been studied extensively. Higher stress levels have been associated with dampened striatal dopaminergic levels, although conflicting studies have also been

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published in the literature [3,4]. It has also been proposed that anxiety levels can be used to elicit extrapyramidal symptoms in clinical practice, although a direct relationship with oculogyric crisis remains to be seen. Stress reduction is also thought to increase the effectiveness of the treatment of OGC [5]. We recognize that a silent genetic predisposition (i.e. hereditary dystonia) is possible but given the predominantly dominant inheritance of such genes, no family history in our patient and limited understanding of the genetic mechanisms behind acute dystonia we are compelled to believe that OGC in our patient was purely stress-induced [6]. The parents described that their child had a very low threshold for getting consumed with studies (i.e. tended to take a lot of stress for exams) and had received a diagnosis of tension headache,

hence further reiterating the causative rather than additive role of stress. In summary, this short case is meant to stimulate discussion on the effect of stress on dopaminergic and cholinergic pathways in general and OGC in particular.

Acknowledgment

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Conflict of interest

None.

RETRACTION

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