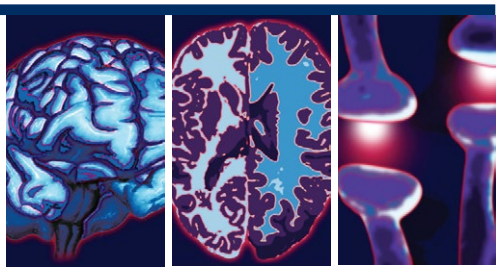
Case Report



Acute psychosis with manic features in patient with Fahr's syndrome: A Case report and Clinical review

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ABSTRACT

Fahr's syndrome, or Idiopathic Basal Ganglia Calcification syndrome, is a rare neurologic condition with a prevalence of <1/1,000,000 individuals. Calcifications can be seen primarily in the basal ganglia, more specifically in the internal globus pallidus, as well as other regions such as the caudate, putamen, dentate nuclei, and thalamus. Affected individuals can have an unsteady gait, slow or slurred speech, clumsiness, involuntary muscle movements, muscle cramps, and seizures. Neuropsychiatric manifestations are also common presenting symptoms and can range in severity from mild memory impairments to dementia, psychosis, and personality or behavior changes. The diagnosis can be made once several criteria are met: bilateral basal ganglia calcifications, progressive neurologic dysfunction, family history of basal ganglia calcifications with an autosomal dominant pattern of inheritance, and the absence of another condition that could explain the calcifications such as metabolic, mitochondrial, infectious, toxic, or traumatic etiologies. There are a handful of case reports in the literature concerning patients with Fahr's Syndrome that experienced their first psychotic break at an advanced age. The case presented in this paper outlines the successful management of a patient with Fahr's Syndrome, and the corresponding literature review serves to highlight an important but little known condition that should be considered in the differential diagnosis for patients presenting with a first psychotic break at an atypical age.

Keywords

Fahr's syndrome, Neuropsychiatry, Genetic, Degenerative, Psychosis, Mania

Introduction

Fahr's syndrome, or Idiopathic Basal Ganglia Calcification syndrome, is a rare neurologic condition with a prevalence of <1/1,000,000 individuals [1-3]. It is most commonly inherited in an autosomal dominant fashion, but can also occur sporadically. Several possible chromosomal loci have been proposed as the source of the defect [4]. Calcifications can be seen primarily in the basal ganglia, more specifically in the internal globus pallidus, as well as other regions such as the caudate, putamen, dentate nuclei, and thalamus. Affected individuals can have an unsteady gait, slow or slurred speech, clumsiness, involuntary muscle movements, muscle cramps, and seizures. Neuropsychiatric manifestations are also common presenting symptoms and can range in severity from mild memory impairments to dementia, psychosis, and personality or behavior changes. Calcifications can be seen on CT or MRI of the head as well as with plain film X-rays. The diagnosis can be made once several criteria are met: bilateral basal ganglia calcifications, progressive neurologic dysfunction, family history of basal ganglia calcifications with an autosomal dominant pattern of inheritance, and the absence of another condition that could explain the calcifications such as metabolic, mitochondrial, infectious, toxic, or traumatic etiologies [4,5]. There are a handful of case

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reports in the literature concerning patients with Fahr's Syndrome that experienced their first psychotic break at an advanced age. The case presented in this paper outlines the successful management of a patient with Fahr's Syndrome, and the corresponding literature review serves to highlight an important but little known condition that should be considered in the differential diagnosis for patients presenting with a first psychotic break at an atypical age.

Case Review

A 57-year-old male with a past medical history significant for Fahr's syndrome known to the patient for the past year, and no prior psychiatric history, presented to the emergency department following erratic behavior which was concerning to his family. Prior computerized tomography (CT) scans of the brain revealed bilateral calcifications in the basal ganglia as well as the thalamus and subcortical white matter; prior magnetic resonance imaging (MRI) revealed intense signals in the bilateral basal ganglia (particularly within the internal globus pallidus), thalamus, and subcortical white matter on T1 weighted imaging consistent with the diagnosis of idiopathic basal ganglia calcification syndrome. Since being diagnosed with Fahr's syndrome, the patient experienced gait unsteadiness, loss of balance, and a significant decline in his ability to perform activities of daily living. The patient became severely malnourished and was eating one meal a day, only when his son was able to prepare a meal for him. The patient enlisted the help of his ex-wife to live in his mobile home with him and assist with his daily needs. In the months prior to admission, the patient began to verbalize several paranoid and persecutory delusions involving a man threatening and sexually abusing him and his adult son, which were investigated by the state police who found no evidence supporting his claims. Two weeks prior to admission, the patient began to behave erratically and became increasingly paranoid and aggressive. He kicked out the windows of his mobile home and set up telescopes to watch for intruders he felt were coming to harm him. He also held a knife to his ex-wife's throat and slept with the knife held firmly on his chest.

The patient was brought to the hospital by ambulance and upon examination was found to be manic with pressured speech, insomnia, and delusions of grandeur. He attributed the changes in his health to his diagnosis of Fahr's syndrome, of which he claimed to be the "only man on Earth affected." He claimed to have not slept for the past 5 days prior to admission due to fears that if he fell asleep, the man who was abusing him would enter his home and kill him. He felt safe on the psychiatry ward and was able to sleep the evening he was admitted. A Montreal Cognitive Assessment (MoCA) was performed and the patient scored a 25/30, which corresponded with a mild deficit in cognitive abilities and memory, specifically in orientation, visuospatial and executive domains. The patient also had impairment of memory of recent events. He claimed that he correctly predicted the outcome of the 2015 World Series, although he identified the team that had just won the Series incorrectly. On physical examination, the patient was emaciated and noted to have several bruises and scratches along his arms which he attributed to his balance changes and the resulting falls as well as a need to lean against surfaces in his home while ambulating. He also had surgical scars on his posterior neck, which he explained were from surgery he had to correct degenerative disc disease that he felt had been so severe that his head was close to falling off of his body.

The patient was treated with 2 mg Haloperidol twice a day to control his acute psychosis. Three days after beginning treatment with Haloperidol the patient began to improve and no longer had delusions, suspiciousness, irritability, or signs of mania. Upon reexamination the patient was ecstatic that someone had finally given him a medication that allowed the "fog to clear." He acknowledged his disorganization and the paranoid delusions and described a lack of control that was most significant over the two weeks prior to admission. He also conceded that he and his son had never been sexually assaulted and that he had been "confused" about that event for several months. A repeat MoCA was scored at 28/30, which is within the range of normal and reflected an improvement in orientation, visuospatial and executive domains. The patient continued to improve throughout his admission and was compliant with his medications. He attended group and recreational therapy and was a strong member of the community during the remainder of his stay. A neurological examination was conducted once the patient began responding to the medication which revealed decreased sensation and paresthesias in all distal extremities, myoclonus in the hands, up-going Babinski signs bilaterally, and an unsteady gait requiring the use of a walker while ambulating.

The patient was discharged home with his family with follow-up appointments scheduled with a psychiatrist, neurologist, and geneticist.

Discussion

Fahr's syndrome has historically been associated with dementia, personality changes, and neurologic deficits occurring in an insidious manner [6]. Cognitive and motor changes are attributed to a dysfunction of the cortico-basal and interhemispheric connections, which leads to a subcortical dementia secondary to calcifications [7]. Seizures are a common presenting symptom and, in approximately 40% of cases, neuropsychiatric symptoms are another early sign of the disorder [8,9]. There have been case reports of patients with Fahr's syndrome who presented with purely psychiatric symptoms without any of the other common manifestations [10]. Fahr's syndrome can vary greatly in the age at which symptoms first become apparent, with the 3rd to 5th decades of life being the most common age range [4]. One of the youngest presentations in the literature was at 23 years-old. The patient was evaluated following the patient's arrest for multiple arsons and was found to have visual hallucinations, delusions of persecution, intellectual disability, and a strong family history of basal ganglia calcifications displaying genetic anticipation in successive generations of the family [11]. Another patient with an early diagnosis of Fahr's syndrome presented in his late 20's and later developed personality changes that had initially been attributed to a loss of intelligence from Fahr's syndrome. However, further testing revealed the changes were due to a loss of drive and motivation while intelligence was preserved [12].

Successful treatment of the psychotic features reported on occasion in Fahr's syndrome have been documented in several case reports using varying neuroleptic formulations with a range of responses. In one instance, significant improvement was reported in a 25 year-old female patient with Fahr's syndrome when treated with risperidone, oxcarbazepine, memantine, and a low dose of lorazepam, which resulted in a resolution of behavioral symptoms after 20 days [13]. Another patient with Fahr's syndrome presented at 56 years of age with irritability, aggression, delusions of persecution, insomnia, fugues, seizures, extrapyramidal symptoms, postural tremor, and cerebellar ataxia. The patient was treated with clozapine, which resulted in resolution of psychotic symptoms after 4 weeks [14].

In the case presented above, the patient had an excellent response to haloperidol as evidenced by his quick return to his baseline cognitive level after 3 days of treatment and lack of serious side effects to the medication. There is a case in the literature, however, in which a 36 year-old patient with refractory psychosis was treated with haloperidol prior to the diagnosis of Fahr's Syndrome and had an increase in the severity of his extrapyramidal symptoms. A change of the patient's neuroleptic to olanzapine and the addition of sodium valproate to control his seizures successfully treated the patient's psychosis without resulting in an increase in the extrapyramidal symptoms associated with both the disorder and the medication used to treat it [9]. While the response to haloperidol observed in the above case was encouraging, the patient's reaction to the drug in the long term may necessitate the utilization of other typical or atypical neuroleptics. Considering the rarity of the condition and the limited cases available for guidance in the literature, it is not possible to recommend one antipsychotic medication as being more efficacious than another at this time. Long-term management with a second generation antipsychotic (such as Quetiapine or Olanzapine) may have a safer side-effect profile compared with haloperidol and should be considered for maintenance therapy.

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