CASE REPORT

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Varied neuro-psychiatric manifestations of Farh's disease: A report of two cases

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Abstract

Fahr's syndrome is relatively rare neuropsychiatric disease characterized by bilateral symmetrical basal ganglia intracranial calcification. This disease has varied neuro psychiatric manifestation ranging from neurological, cognitive, and psychiatric manifestations. Here we are representing two cases. In the first case, a 24-year-old male with Fahr's disease (FD), presenting with schizophrenia like psychosis which was not responding to medication, his neurological examination was normal and CT scan of brain revealed symmetrical large areas and foci of calcification in bilateral basal ganglia. Another case was a 70 year old lady presenting with gradual onset of dementia like features, there were no apparent neurological deficit and CT scan brain revealed bilateral basal ganglia calcification. Both the cases on screening did not reveal any evidence in the other family members. Farh's disease (FD) has pronounced positive brain imaging findings along with neuro psychiatric manifestations. We reported sporadic cases of FDs with its neuropsychology and radiological findings.

Key words

Bilateral basal ganglia calcification, dementia, Fahr's disease, hypocalcaemia, psychosis.

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Farh's disease: A report of two cases

Background

Fahr's disease (FD) is relatively rare, degenerative disorder, which is characterized by idiopathic calcification of the basal ganglia and it was found that, thalamus, dentate nucleus of cerebellum as well as the frontal cortex also get affected as the disease progresses [1, 2]. There are relatively less cases of FD. A study by Kazis A, showed, 7040 patients were examined with CT scans, out of which only 10.02% showed symmetrical intracranial calcifications [3]. Some other research works revealed even less – only 2% and 0.49% [3-5]. On the basis of clinical aspect, FD is a heterogeneous condition and evident in the form of a broad range of psychiatric changes, impairment in the cognitive functions, and neurological features [6]. Researchers opine that bilateral calcification with neuropsychiatric manifestations and extrapyramidal disorders, with normal calcium and phosphorus metabolism is needed for diagnosis [7]. The disease is characterized by seizures, rigidity, and dementia and calcification of the basal ganglia [8]. Clinical findings in the diagnostic view point of Fahr's disease are crucial, because radiologists may view basal ganglia calcification (BGC) as an incidental finding [9]. Before 50 years of age incidental discovery of BGC, merits diagnostic investigation. Fahr's disease is progressive neurodegenerative disorder [10, 11]. Although, abnormal deposition of calcium among the adults generally begins in the third decade of life, but neurological deterioration takes place two decades later, BGC can also occur in pediatric populations [12]. Clinical research on the basis of biochemical investigations showed that FD is mostly associated with a phosphocalcic metabolism disorder, a known condition of hypoparathyroidism. Other factors responsible for initiating calcification are defective iron transport and free radical production which damage the tissues [8]. There is also reduction in blood flow to the calcified regions, which can be clinically correlates with signs and symptoms [13]. Genetically Fahr's disease is a result of as an autosomal dominant trait; but there is also a chance of transmission by autosomal recessive trait [14]. The chromosome locus is 14q (IBGC1). Scientists have identified the possible second locus on chromosome 8 and a third on chromosome 2. [15-17]. Symptoms include gradual deterioration of mental function, loss of motor development, spastic paralysis, and athetosis. In addition, optic atrophy may occur. It has also been reported that, in 40% cases with BGC, psychiatric illness was initially observed. Apart from that cognitive, and mood disorders are also evident. Psychiatric manifestations are due to subarachnoid space dilatation, apart from extensive calcification [5]. A number of scientific literatures documented different forms of FD - autosomal dominant [18], sporadic [1] and autosomal recessive [19]. There are just a few reports of this condition from the Indian subcontinent [20-22]. We report two varied cases to highlight the heterogeneous nature of this rare disorder.

Case Reports

Case 1:

A 24 year old Hindu male visited to outpatient clinic of tertiary care centre (Institute of Medical sciences, Sir Sunderlal Hospital of the Banaras Hindu University, Varanasi) with chief complains of aggressiveness in behavior, use of obscene language with friends and family members, with recent onset. Relatives also revealed behaviors as smiling and talking to himself, talking to ghosts and being afraid of other people. Recently his sleep pattern had also become quite irregular, sleeping for only three hours a day.

On further evaluation, history of obsessive behaviors was also found, where as the neurological examination was normal. On further investigation of the mental state conditions, delusion of persecution, auditory hallucinations as two or more voices discussing among themselves and commanding was major problems reported by the patient. There were two siblings and only the mother was alive, the investigation of the family members revealed that there was no positive finding. These findings were suggestive of psychosis, resembling schizophrenia and patient had difficulty in describing these experiences. Mini-mental state examination (MMSE) score was 25. Hematological and biochemical parameters were within normal range. ECG was normal. A striking finding was observed in computed tomography (CT) scan of brain. There was prominent bilateral calcification of the globus pallidus with mild ventricular dilatation (left>right) bilateral calcification of the globus pallidus with mild ventricular dilatation (left>right). Overall features were suggestive of Fahr's disease. The patient did not respond to any of the following drugs, haloperidol, resperidone and olanzapine. Later he was stabilized on a combination of 200 mg amisulpride and 10mg of zolpidem. He is currently able to carry out his routine activities and helps brother in family business of running a general merchants shop.

Case 2:

A 70 year old elderly female was brought in the outpatient clinic of tertiary care centre (Institute of Medical sciences, Sir Sunderlal Hospital of the Banaras Hindu University, Varanasi) by family members with the complaints of forgetfulness, bent posture, frailty. The family members reported that she had started showing forgetfulness for the past 8 months and bent posture was since one year the frailty was a recent development. The bladder and bowel control was normal. The motor functions were normal except camptocormia (bent posture), the neurological examination revealed no deficit. The higher functions revealed a deficit in recent and

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Farh's disease: A report of two cases

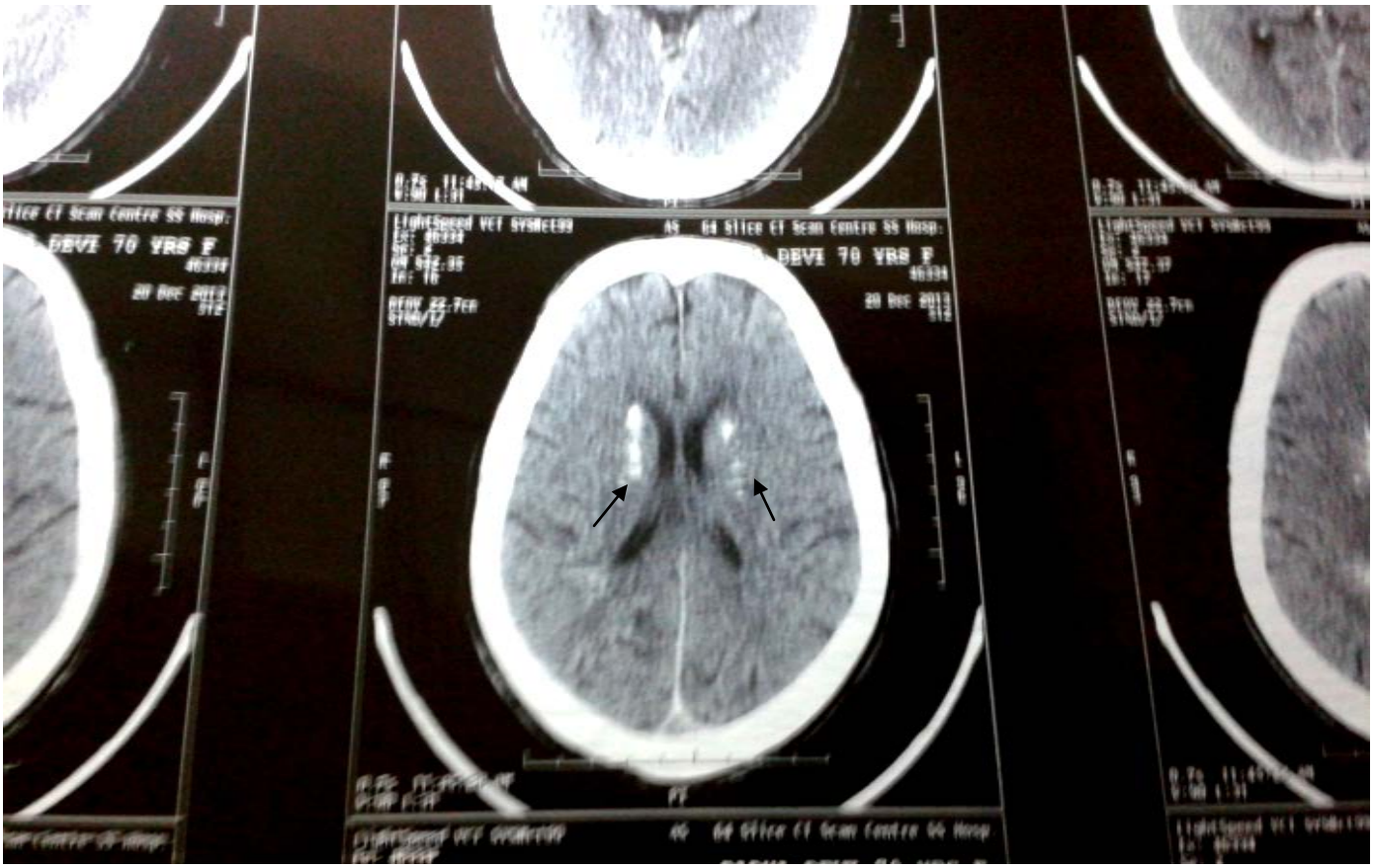

Figure - 1 - CT scan showing basal ganglia calcification marked by the arrow

immediate memory along with attention difficulties. The MMSE score was 20. The biochemical and electroencephalographic examinations did not reveal any abnormality except low calcium level (6.2gm%). Computed tomography revealed bilateral basal ganglia calcification along with cerebral atrophy (**Fig.1**). Her family members were not alive except for a daughter and two grand children. Examination of all the three members did not reveal any abnormality.

Clinical features were indicative of Fahr's disease. She has been stabilized on 10 mg of donepzil and dietary supplements of iron, calcium and multivitamins. Till the last follow up (3 months back) she was maintaining status quo with marginal improvement in the cognitive status and considerable improvement in her frailty.

Discussion:

The patients reported in the case series present with the classically described presentations of Farh's Disease (FD) [1]. The cases lacked gross extrapyramidal symptoms, except camptocormia in the second case; however the age can be implicated for this sign.

Importance of Differential diagnosis in Fahr's disease

There was no metabolic abnormality except hypocalcemia in the second case, which again can be implicated to age. Overall normal neurological examination is another finding in both cases, similar cases have been reported in the literature [18]. In early twenties, the presentation of such cases with recent onset of first episode psychosis with schizophreniform symptomatology may mislead a physician towards schizophrenia [6]. The clinical expression of FD varies from psychiatric disorders, epileptic seizures and dementia both the cases presented mimic the description except for a lack of epilepsy [23]. Some other features were also considered, like syncope and pseudohypoparathyroidism [8]. There are around 40% of cases, where chief complains of the patient initially with psychiatric features, cognitive, psychotic, and mood disorders, [11, 5] like two of our cases. In FD, Paranoid and psychotic features often evident in the age group between 20 and 40 [1, 10].

ISSN 2321-5291
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Farh's disease: A report of two cases

Comparative picture of treatment pattern

Two patterns of psychotic presentation in FD are known, including early onset (mean age 30 years) with minimal movement disorder and late onset (mean age 49 years) attended by dementia and movement disorder. Our cases highlight both the patterns of presentation. In the first case, patient was 24 years with psychosis and there was no involvement of extrapyramidal tract [1]. Although FD may be associated with familial background, but in our cases there was no association [18, 19].

Initially the patient was prescribed haloperidol, resperidone and later olanzapine, as there was a diagnosis of schizophrenia like psychosis. As mentioned earlier, the presentation of patient in early twenties with recent onset of first episode psychosis with schizophrenia forms symptomatology. In the earlier days there was possibility of diagnosis of a non affective psychosis [16]. The poor response to medication is seen in psychosis related to FD [21]. This patient also responded poorly to initial treatment and as diagnosis was confirmed, amisulpiride was added in the first case, the choice of medication was determined by the high propensity of developing extrapyramidal symptoms due to basal ganglia involvement and the likelihood of developing seizure disorder [1].

Subsequently the psychotic symptoms responded well to treatment over three to four weeks with improvement of occupational functioning in the form of a less challenging work and good support from the family members. The second case presented with hypocalcemia, which has been noted in other cases [8]. These case reports emphasize the importance of thorough investigations of cases presenting with unusual neurologic clinical manifestations. Increased utilization of imaging techniques in psychiatric practice may be helpful in this context for the early detection of FD.

Conclusion

Fahr's disease is associated with a variety of other diseases, so differential diagnosis, especially in cases with neurological symptoms and findings of cranial imaging should be an important criteria for diagnosing. Treatment modalities such as discovering new drugs should get importance in this context to reduce the loss of brain functions.

Abbreviations

Basal ganglia calcification (BGC), Fahr's disease (FD)

Competing interests

None declared.

Authors' contribution

Mona Srivastava: Concept, editing, organization, literature review, case selection and drafting. Abbas Mehdi: literature review, case work up and follow up. Amit Sahi: Rough draft, literature search, case work up.

Authors' information

Dr. Mona Srivastava - has done her post graduation in Psychiatry from the prestigious NIMHANS at Bangalore. She is currently the associate professor in psychiatry at Institute of Medical Sciences (IMS) at Banaras Hindu University (BHU).she has authored more than four dozen national and international papers. She has also written chapters in books. She has been a regular speaker and resource person at national and international seminars and conferences. She has been a co organizing secretary for CME on women mental health, geriatric psychiatry, Hospital management conference and a workshop to be organized on cytogenetics. She is also a frequent writer for mass media like news papers, magazines and radio and television channels. She is a reviewer for many journals and is in the editorial board of the zonal journal. She is a life member of almost all the bodies concerning psychiatry at the national level.

Dr. Abbas Mehdi - has done his post graduation from IMS, BHU. His post doctoral thesis is on nicotine replacement therapy. He has currently joined as senior resident in PGIMER at Chandigarh.

Dr. Amit Sahi - having completed his MBBS, he is currently a second year resident

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Farh's disease: A report of two cases

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