

Familial Hemiplegic Migraine and Psychosis

Alison Kor, M.D., Vanessa Dang, M.D., Judit Perez Ortiz, M.D., PhD., Christopher Sola, D.O., FACLP

Department of Psychiatry and Psychology, Mayo Clinic, Rochester, MN

BACKGROUND

- Familial hemiplegic migraine (FHM) is a rare autosomal dominant disorder characterized by migraine headache, numbness, weakness, and complex auras.¹
- Diagnostic criteria includes the presence of a reversible motor deficit associated with at least one other transient neurological symptom (visual, sensory, speech/language) and similar episodes in relatives.²
- There are four genetic variants, with FHM type 1 and type 2 occurring most frequently. FHM1 and FHM2 are due to mutations in the CACNA1A gene and the ATP1A2 gene, respectively.²
- There are a few reports in the literature describing psychotic symptoms in FHM type 2.²
- We present a patient with severe migraine associated with psychosis who was found to have a genetic variation suggestive of FHM2.
- We also present a review of the literature on familial hemiplegic migraine with psychotic symptoms.

CASE

A 49-year-old man with no prior psychiatric diagnoses presented to the Emergency Department with agitation, hallucinations, left-sided numbness, and headache. His medical history included migraines with numbness and weakness, twice requiring hospital admissions for similar episodes associated with confusion and agitation (ages 25 and 35). Physical examination revealed left hemineglect. Head imaging (computed tomography angiography, computed tomography) and labs (complete blood count, metabolic profile, urine drug screen, CSF studies) were unrevealing. Upon admission to inpatient Neurology, he became agitated with auditory and visual hallucinations, and delusions that staff were “robots and zombies”. A brain MRI demonstrated diffuse right cerebral hemispheric cortical swelling favoring migraine headache. Psychiatry recommended haloperidol for psychotic symptoms. Verapamil was initiated for hemiplegic migraine. After 6 days, he was discharged on verapamil and haloperidol, with resolution of migraine and hallucinations. Subsequent genetic testing revealed a missense mutation of unknown significance replacing arginine with histidine at codon 763 in the ATP1A2 gene (known to be associated with FHM2). His family was encouraged to complete genetic testing, but declined.

SUMMARY OF LITERATURE REVIEW

PUBLICATION TITLE	AUTHORS	YEAR OF PUBLICATION	NUMBER OF CASES	AGE AND SEX	SYMPTOMS	TREATMENT
Clinical aspects of familial hemiplegic migraine in two families ⁴	O'Hare, J. A., M. J. Feely, et al.	1981	1	54 M	Visual hallucinations; Delusions (believed himself to be dead, that he was being transported in a coffin).	Phenobarbitone and trifluoperazine were reported as effective. Propranolol was trialed but not effective for the patient.
Episodes of acute confusion or psychosis in familial hemiplegic migraine ⁵	Feely, M. P., J. O'Hare, et al.	1982	8	70 F, 35M, unknown ages and sex of other patients	Auditory and visual hallucinations, paranoid delusions, bizarre delusions	Not described
Migraine madness: Recurrent psychosis after migraine ⁶	Fuller, G. N., A. Marshall, et al.	1993	1	69 M	Visual and auditory hallucinations, persecutory delusions, reduplicative paramnesia	Not described
Familial Hemiplegic Migraine with Cerebellar Ataxia and Paroxysmal Psychosis ⁷	Spranger, M., S. Spranger, et al.	1999	2	46 M, 42 M	Auditory and visual hallucinations, psychomotor agitation, persecutory delusions	Treatment with haloperidol was effective in shortening the episodes and relieving the symptoms
Stroke or stroke mimic? Paranoid psychosis with misidentification delusions complicating right but not left hemisphere attacks in a case of familial hemiplegic migraine ⁸	Collas, D. M. and V. Bell	2010	1	68 M	Visual hallucinations, paranoid delusions (claimed he had been abducted by Mafia; thought monitors were watching him, saw faces on toilet paper)	The symptoms persisted until responding rapidly to quetiapine started on day 10.
Off-label use of acetazolamide in a patient with familial hemiplegic migraine and concomitant psychotic episodes ⁹	Koch, H. J., A. Sykora, et al.	2010	1	42 M	Visual and auditory hallucinations, paranoid delusions	Preventative treatment with topiramate and acetazolamide; acute treatment with risperidone, haloperidol, and lorazepam.
Psychotic aura symptoms in familial hemiplegic migraine type 2 (ATP1A2) ¹	Barros, J., A. Mendes, et al.	2012	2	48 M, 38 F	Visual hallucinations, paranoid delusions, psychomotor agitation, belief that they were "time traveling"	Not described
Familial Hemiplegic Migraine and Recurrent Episodes of Psychosis: A Case Report ¹⁰	Labianca, S., R. Jensen, et al.	2015	2	44 M, 70 M	Visual and auditory hallucinations, delusions	Diazepam, levomepromazine (used as a sedative), and diclofenac

DISCUSSION

- Although our patient had prior episodes of psychosis with migraine, he received no unifying diagnosis and was managed acutely with antipsychotics, until undergoing genetic testing that was consistent with familial hemiplegic migraine type 2. The psychotic symptoms were suspected to be related to FHM2 and responded to a combination of verapamil and haloperidol.
- A search of Embase, MEDLINE, SCOPUS, Web of Science, and Google Scholar yielded 8 studies reporting a total of 18 cases of familial hemiplegic migraine with concomitant psychotic symptoms. Clinical presentations included hemiparesis, hemisensory disturbances, auditory and visual hallucinations, delusions, and a family or personal history of migraines.
- Multisensory hallucinations and perceptual disturbances in migraine are more common than previously believed.³

CONCLUSIONS

- FHM type 2 should be included in the differential diagnoses for acute psychosis in patients with prior history of migraine with aura.
- Treatment implications include a combination of short-term antipsychotics for acute stabilization and verapamil for longer duration of symptom remission.

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