

Schizophrenia-Like Psychosis Associated with Vein of Galen Malformation: A Case Report*

ASAF ALEEM, M.D.¹, AND MARY ANN KNESEVICH, M.D.²

A 34 year old patient presented with a schizophrenia-like clinical picture, and was later found to have a large vein of Galen Arteriovenous Malformation (AVM). There are reports in the literature suggesting that vein of Galen AVMs are associated with psychiatric symptoms. However, the clinical pictures tend to be non specific. We discuss the relevance of the association of vein of Galen AVMs with schizophrenia-like symptomatology.

Arteriovenous malformation (AVMs) represent the persistence of foetal type vascular architecture caused by arrested or delayed development. The vein of Galen malformations are due to a direct communication between the vein and one or more cerebral arteries.

These malformations can produce a variety of symptoms, including hemodynamic disturbances, obstructive hydrocephalus, convulsions, subarachnoid hemorrhage, and focal neurological signs.

Psychiatric manifestations have been reported in patients with vein of Galen AVMs (1-7). The syndromes reported in these cases include mental retardation, personality aberrations, mood changes, paranoid ideation, hallucinations and dementia.

We report a patient who presented a schizophrenia like clinical picture associated with a vein of Galen Arteriovenous malformation and we discuss the significance of this association.

Case History

The patient is a 34 year old unemployed black female who was admitted to the medicine service for treatment of congestive heart failure. A psychiatric consultation was obtained because the patient was noted to be apathetic and withdrawn.

The patient had a 12th grade education following which she led a "normal life" in that she lived in an apartment by herself, was gainfully employed as a nurses's aide and was friendly and outgoing. She stopped working at the age of 24 because of "nervousness" but did not seek any professional

help until the age of 30 when she was hospitalized at a state psychiatric hospital. Prior to the hospitalization over a period of 4 to 5 months she had become withdrawn and preoccupied with herself. She would stand in front of a mirror for hours, and at times would argue inappropriately with her family members. She slept poorly. About 3 months prior to the hospitalization she had started hearing voices. The voices on occasion were incomprehensible to her and on occasion they would say "now that you need help there is no one to help you", "you have to beg other people for what you want." Her admitting diagnosis was major affective disorder. After 8 weeks of inpatient treatment with antidepressants, she was marginally better and was discharged. She attended an outpatient clinic for a brief period following her discharge, but soon dropped out. When we saw the patient she had had no psychiatric treatment for about 2½ years.

It is apparent from her history that she functioned rather poorly after the onset of her symptoms. She did not seek employment, remained withdrawn and spent most of her time at home. She appeared uncomfortable around people and intermittently complained of hearing voices and talked about voodoo. Her mother noted that she occasionally "looked depressed", but there were no significant sleep or appetite disturbances. There was no history of alcohol or drug abuse. She had 2 full siblings and 12 half siblings; none of her first degree relatives have schizophrenia.

On mental status examination she appeared apathetic, had minimal eye contact, no spontaneous speech, and answered questions briefly. Her affect was flat and she reported intermittent auditory hallucinations. There were no Schneiderian first rank symptoms. Her insight was limited to physical problems. Physical examination showed evidence of congestive heart failure, which is a frequent complication of large AVMs and can occur at any age, even in children (1). There was no other physical abnormality to account for congestive heart failure in this patient. Neurological exam did not show any focal abnormalities. Laboratory data including CBC, SMA-12, and thyroid function tests (T₃, T₄) were normal.

A vein of Galen AVM was confirmed by magnetic resonance imaging (Fig. 1), Head CT and carotid angiogram. Because of the size and complex structure of the AVM surgical treatment was impossible. She was treated with diuretics with improvement in her cardiac status.

Her psychiatric treatment consisted of thiothixene started at 2 mg. tid and gradually increased to 15 mg. tid over a period of three weeks. This resulted in improvement, that is, a marginal increase in her level of psychomotor activity and

*Manuscript received November 1985; revised January 1986.

¹Instructor, Department of Psychiatry, Wayne State University, V.A. Medical Center, Allen Park, Michigan.

²Chief Resident, Department of Psychiatry, Washington University School of Medicine, St. Louis, Missouri.



Figure 1. Magnetic Resonance Imaging (MRI) scan showing a large vein of Galen AVM.

elimination of auditory hallucinations. She continued to manifest a flat affect and apathy. She was discharged on thiothixene 45 mg/day. On follow-up at 6 weeks after discharge, her mother described her as doing better and that she was taking more interest in household activities, and did not complain of hearing voices.

Discussion

Schizophrenia-like psychoses are known to occur in organic cerebral disorders. Davison and Bagley (8,9) in an extensive review on this subject conclude that the association of many organic cerebral disorders (including AVMs) with schizophrenia exceeds chance expectation, and that these psychoses occur in patients without genetic loading for schizophrenia. They propose that schizophrenic experience and behavior is due to a "specific brain dysfunction". Organic cerebral disorders and drugs, may act directly to produce a similar brain dysfunction without requiring a genetic predisposition. AVMs can significantly alter hemodynamics in the CNS by shunting of blood supply, causing chronic ischemia of surrounding structures which eventually results in gliosis (1). The vein of Galen lies adjacent to a number of structures such as

the upper brain stem and the 'Limbic structures' which have been implicated in emotional and behavioral disorders. In fact, Davison and Bagley (8,9) noted that lesions in the diencephalon and temporal lobe were of particular significance in the genesis of schizophrenia like psychoses. Congestive heart failure was secondary to the AVM in this patient and to our knowledge congestive heart failure has not been reported to cause a schizophrenia like clinical picture. Therefore, we think that our patient exemplifies an organic cerebral condition (AVM in this case) resulting in a schizophrenia like clinical syndrome.

Acknowledgement

The authors wish to thank Dr. Yergani for his help in preparing this manuscript.

References

1. Lagos JC. Congenital aneurysms and arteriovenous malformations. In: Vinken PJ, Bruyn GW, eds. Handbook of clinical neurology, Vol. 31. New York: North-Holland, 1977.
2. Gold AP, Ransohoff J, Carter S. Vein of Galen malformation. *Acta Neurol Scand* 1964; (Suppl) 40 (11): 1-31.
3. French LA, Peyton WT. Vascular malformation in the region of the great vein of Galen. *J Neurosurg* 1954; 11: 488-497.
4. Wolfe HRI, France WE. Arteriovenous aneurysm of the great vein of Galen. *Br J Surgery* 1950; 37: 76-78.
5. Cohen MM, Kristiansen K, Hval E. Arteriovenous malformations of the great vein of Galen. *Neurology* 1954; 4: 124-127.
6. Proppen JL, Arman N. Aneurysms of the great vein of Galen. *J Neurosurg* 1960; 17: 238-244.
7. Remington G, Jeffries MB. The role of cerebral arteriovenous malformations in psychiatric disturbances: case report. *J Clin Psychiatry* 1984; 45: 226-229.
8. Davison K, Bagley CR. Schizophrenia-like psychoses associated with organic disorders of the CNS: a review of the literature. Part II of current problems in neuropsychiatry, (Ed Herrington). *Br J Psychiatry Special Publications* No 4 Ashford: Headley Bros Ltd, 1969: 113-184.
9. Davison K. Schizophrenia-like psychoses associated with organic cerebral disorders: a review. *Psychiatr Dev* 1983; 1: 1-34.

Résumé

Les auteurs rapportent le cas d'une patiente de 34 ans qui présentait des symptômes semblables à ceux de la schizophrénie et chez qui on a plus tard découvert une malformation artério-veineuse de la grande veine de Galien (MAV). Certaines recherches ont déjà montré qu'il existe peut-être une relation entre les symptômes de nature psychiatrique et la MAV. Pourtant, le tableau clinique est généralement non spécifique. Les auteurs analysent en conclusion la signification d'une MAV associée à des symptômes qui rappellent ceux de la schizophrénie.