Behavioral Manifestations in a Case of Hydrocephalus

Parag Shah¹, Kamlesh Dave², Ritambhara Mehta*³

ABSTRACT
A chronic and arrested hydrocephalus, presenting with prominent behavioral problems in a patient with treated Congenital Hydrocephalus and a Ventriculo-Peritonial Shunt in situ for twenty seven years. A case report, which signifies neuro-psychiatric liaison.

Key words: Hydrocephalus, Behavioral changes, Neuro-psychiatry.

Introduction
Hydrocephalus is a condition caused by obstruction in drainage, decreased absorption or excess production of Cerebrospinal fluid (CSF) [Aronyk et al., 1993]. Resultant excessive CSF enlarges the cerebral ventricles and increases intracranial pressure, which causes necrosis and thinning of parenchyma as well as the clinical manifestations of hydrocephalus. Types include- (i) Non-communicating — caused by obstruction in the CSF drainage pathway, usually present as a primary condition at the time of birth and can occur at any age. (ii) Communicating — caused by decrease in absorption or increase in production of CSF, usually developing in later life secondary to other medical condition [Behrman et al., 1998].

Manifestations of hydrocephalus in children include increase in head circumference, prominent forehead, prominent scalp vein, headache, vertigo, vomiting, behavioral changes, papilloedema, retinal hemorrhage, optic nerve atrophy, abnormal head movements, hyperreflexia, knee/ankle clonus, spasticity and rarely ophthalmoplegia [Behrman et al., 1998].

Hydrocephalus when found in children has a guarded prognosis with two-third of the patients developing mental retardation. Its pathophysiology and clinical features in children have been described well but very few studies are available for the same in adults. Adults with hydrocephalus usually present with triad of dementia, truncal ataxia and incontinence (Normal Pressure Hydrocephalus).

Case Report
A thirty three years old man was brought by his parents in the psychiatric out patient clinic with behavioral problems of lack of emotional attachment with family members, unconcerned and indifferent attitude towards family members and self, spending money lavishly as well as picking and borrowing money for the same, frequent minor vehicular accidents and yet unconcerned about it, making futile attempts to achieve his goal of becoming an actor, speaking lies and manipulative behavior for personal gains, playing with children and getting involved in child games, increased quantity and speed of eating and thus unconcerned about social norms. On asking the patient he denied of any complaints. But he did agree that what his parents are saying was right. The parents noticed these problems more in the last two years.

The perinatal history was not significant but at the age of 1 month he developed symptoms suggestive of Hydrocephalus (vomiting, increased head circumference, wide anterior fontanelle, sunset appearance of eyes and mild spasticity of lower limbs). Diagnosis was made by X-ray skull showing slight separation of sutures and Ventriculography showing fairly large lateral ventricles with no air in the aqueduct (CT scan or MRI facilities were not available in those days). Diagnosis was made by X-ray skull showing slight separation of sutures and Ventriculography showing fairly large lateral ventricles with no air in the aqueduct (CT scan or MRI facilities were not available in those days). Infections were ruled out by normal blood investigations, CSF investigations and Mantoux test. At 6 months of age ventriculo-atrial shunt was done and the patient was well with it. Before 6 months of age milestones were delayed. After ventriculo-atrial shunt was done milestones developed.

¹2nd Year Resident
²Assistant Professor
³Associate Professor and Head, Department of Psychiatry, Government Medical College and New Civil Hospital, Majura Gate, Surat – 395 001
E-mail: ritambhara@icenet.net
*Correspondence
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at appropriate ages. At 6 years of age he again developed symptoms of vomiting, vertigo and headache, when the ventriculo-atrial shunt got blocked. Revised shunt (ventriculo-peritoneal) was done, which remained in situ for next 27 years.

He showed poor performance in school and gradual deterioration over the years with problems like absenteeism, speaking lies and lack of interest. At 12 years of age, once he ran away from home stating pressure for the studies as the reason for going away. In 7th standard he developed habit of masturbation (3-8 times per day). He started chewing tobacco when he was in 9th standard. He stopped his studies after 10th standard.

Between 19 to 25 years of age he changed his job 10 times for reasons like physical stress, better prospects, quarrels with boss or mismanagement of money.

He got married at 25 years of age and had a child after 8 years of active married life. He was diagnosed as having oligospermia. He continued masturbation even after marriage (1-2 times per day). He exhibited decrease in libido in the last few months and a careless attitude towards family planning measures.

Parents report that during his adolescence and adulthood there was lack of sharing and emotional attachment towards family members. He had no guilt or shame for his ‘wrong’ actions and used to become angry when commented for the same. Parents were tolerant and supportive most of the times. He exhibited a total unconcerned attitude towards his fellow persons while eating, watching T.V. or talking over phone. For 1-2 times per week he collided with someone on the roads driving his two-wheeler especially in last 2 years.

There was history of excruciating headache lasting for 2-3 days episodically, but was treated with analgesics without any suspicion for recurring hydrocephalus in absence of vomiting and vertigo. There was no history of seizures or major neurological symptoms.

Mental status examination revealed unconcerned and disinterested looks with occasional eye-to-eye contact with psychomotor retardation, emotional blunting and circumstantiality. Memory was markedly intact. Insight was absent and social judgment disturbed. There was no dementia, truncal ataxia or incontinence.

Psychological test revealed a significant lesion affecting frontal, parietal and right temporal functions in decreasing intensity respectively.

MRI was advised suspecting neurological involvement and it revealed abnormal severe dilation of posterior portion and temporal horn of right lateral ventricle with thinning of overlying parenchyma, moderate dilation of the rest of the lateral and third ventricle, narrowing of the aqueduct and thinning of corpus callosum.

The patient was referred to neurosurgeon for further management. Revised shunting was done once again. After that his headache disappeared and behavioural problems improved to a great extent with patient regularly going to his job within 2 months. There was significant decrease in indifference and apathy towards family members.

Discussion

The MRI findings confirmed the diagnosis of a developing hydrocephalus and its obvious manifestations were only in the form of behavioral problems and episodic excruciating headache. Psychological test also supported the view. Correlating anatomically, corpus callosum lying in close proximity, is usually affected by the dilating lateral ventricle, undergoing changes like swelling, thickening and demyelination respectively. Involvement of corpus callosum affects non-verbal cognitive skills and motor abilities [Fletcher et al., 1996]. Also, lateral horn in the temporal lobe lies in close association with amygdaloid body above and hippocampus below, both of which are parts of limbic system and may be affected by the dilating lateral horn. Studies show that bilateral removal of temporal lobe is followed by an attitude of indifference and total loss of emotional response, hypersexual or perverted sexual behavior. [Poddar et al., 1996].

Behavioral problems are more common in children with hydrocephalus, irrespective of etiology [Fletcher et al, 1995]. A child with congenital hydrocephalus has four times more risk of developing psychiatric disease, compared to a normal child. Thirty percent develop mild mental retardation and eight percent severe mental retardation in their later life [Lumenta et al., 1995].

Among older patients of hydrocephalus, headache is the most common complaint [Behrman et al., 1998]. Gradual change in personality and deterioration in academic productivity suggest a slowly progressive form of hydrocephalus [Behrman et al., 1998]. Hydrocephalus may manifest with headache, nausea, vomiting and personality
and behavior disturbances such as irritability, indifference, apathy and drowsiness [Ghai et al., 1996].

Chronic organic syndrome manifests as dullness and apathy, emotional flattening, loss of drive and persistence in doing an act, impoverished thought, obsessional symptoms, becoming increasingly egocentric, better performance in personal matters, loss of intellectual flexibility, impaired judgment and absent insight [Slater et al., 1992].

In this case, the clinical profile and investigations fulfilled the DSM-IV criteria for ‘Personality change due to a general medical condition’ and ICD-10 criteria for ‘Other organic personality and behavioral disorders due to brain disease, damage and dysfunction’.

The present literature mentions briefly about the psychiatric manifestations of hydrocephalus, but detailed accounts of the manifestations are rare. The above case is an example of neuropsychiatric interface with clinical implications that behavioural problems can have an organic disease as the basis.

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