

Study on Etiological Profile of Reversible Dementias In A Tertiary Care Hospital In South Kerala

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ABSTRACT-

Introduction :

“**Reversible dementias**” are conditions that are associated with cognitive dysfunction secondary to reversible causes, which are treatable. These group of patients are the people who should be identified early at Dementia clinic. Delay in diagnosing these patients makes them untreatable after certain stage.

Prevalence of reversible dementias are highly variable, with a number of studies reporting a range between 8-40%. They are common among individuals younger than 60 years age. The prevalence of potentially reversible disorders has been reported 18% in patients under the age of 65 years but only 5% in those over 65 years. If detected and treated early, these dementias can be reversed or their progress halted.

Aim: The aim of the study was to assess the prevalence and etiology of Reversible dementia patients admitted in our hospital and their outcome.

Materials and Methods: It was a Retrospective study based on review from hospital database of Reversible dementia patients admitted at our hospital from October 2015 to September 2020 and appropriate statistical analysis done. Ethical clearance obtained prior to study.

Results: 384 patients were included in the study. Of which 302 (78.6%) patients were of irreversible progressive neurodegenerative dementia (ID) and 82 (21.4%) patients were of potentially reversible dementia (PRD). 57.3% of patients were in age group below 60 years. Infective, metabolic, nutritional causes were common, which contributed to 61% of total patients and had good outcome on follow up. Depression contributed to 7.3% of patients, and were seen in age below 60 yrs and had good recovery. Patients with subacute/chronic Subdural hemorrhage and normal pressure hydrocephalus showed modest recovery post surgically and on follow up.

Conclusion: Reversible dementia patients presenting in neurological clinics are common. Though it is more common in younger age group, but cannot totally rule out in elderly group. A systematic approach in medical diagnostics required to diagnose and treat appropriately at an early stage as they have good prognosis.

Keywords: Reversible Dementia, Etiology, outcome.

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I. Introduction-

Dementia is characterized by gradual decline in cognitive functioning. DSM-5 (Diagnostic and statistical manual of mental disorders) criteria of dementia include as a significant cognitive decline from previous level of functioning in one or more cognitive domains:^{1,2}

1. Learning and memory
2. Complex attention
3. Executive function
4. Language
5. Perceptual motor function
6. Social cognition.

The most common Dementia patients encountered in neurology clinics are degenerative causes like Alzheimer disease, Dementia with lewy bodies, Frontotemporal dementia, Progressive supranuclear palsy, Multi system atrophy, Cortico basal degeneration, Parkinson's disease dementia, Inherited dementia.³

“**Reversible dementias**” are conditions that are associated with cognitive dysfunction secondary to reversible causes, which are treatable. These group of patients are the people who should be identified early at Dementia clinic. Delay in diagnosing these patients makes them untreatable after certain stage.

Prevalence of reversible dementias are highly variable, with a number of studies reporting a range between 8-40%.⁴ Their ranges vary according to various studies.

They are common among individuals younger than 60 years age. Their prevalence is fairly less in older individuals aged 65 years and above. In an Indian study by Trivedi JK et al, the prevalence of reversible dementia was found to be 18%. The common causes were central nervous system (CNS) infections such as chronic meningitis, NPH, and Vitamin B12 deficiency⁴

The prevalence of potentially reversible disorders has been reported 18% in patients under the age of 65 years but only 5% in those over 65 years⁴. If detected and treated early, these dementias can be reversed or their progress halted.^{5,6,7}

There should be detailed clinical assessment and appropriate investigations with imaging, CSF study, EEG study for all patients coming to neurology clinic with clinical features of memory impairment and behavioral changes, as early detection and management of reversible cause prevents morbidity. Hence it is important for a clinician to identify the reversible etiology of treatable dementia.

To enumerate few Red flags in dementia which clinicians should concentrate are-⁸

- Early age onset of memory impairment – especially in child bearing women, and also in age group less than 60 yrs.
- Fluctuating symptoms of memory impairment – which occur and last for few hours.
- Rapid decline in memory and associated psychiatric symptoms.
- Disparity in clinical findings, symptoms and imaging.
- High risk behavior.
- Chronic exposure to substance abuse.

To enumerate few common causes of reversible dementia encountered as per various studies⁹ are – infectious causes (sub acute/ chronic meningitis), metabolic (hypothyroidism, Hashimoto's encephalopathy), Nutritional (vitamin B12/folate deficiency, Wernicke's encephalopathy), toxic/substance abuse, autoimmune/paraneoplastic encephalitis, systemic vasculitis, pseudo depression, sleep apnea syndrome, subdural hemorrhage, normal pressure hydrocephalus.

Study on prevalence of potentially reversible conditions in dementia and mild cognitive impairment in a geriatric clinic by Weerasak Mungpaian, Chonachan Petcharat, Varalak Srinonprasert¹⁰ retrospectively reviewed the medical records of patients who attended the outpatient geriatric clinic at Siriraj Hospital, Bangkok between January 2005 and December 2010 and collected the data regarding potentially reversible conditions of cognitive impairment. There were 233 patients newly diagnosed with dementia and 60 patients diagnosed with Mild cognitive impairment (MCI). They found potentially reversible causes of dementia in 17 patients (7.3%). The causes were hypothyroidism (2.6%), vitamin B12 deficiency (1.7%), normal pressure hydrocephalus (NPH) (0.9%), depression (0.9%), folate deficiency (0.4%), reactive Venereal Disease Research Laboratory (VDRL; 0.4%) and chronic subdural hematoma (CSH; 0.4%). Clinical improvement after treatment of the potentially reversible conditions was seen in four patients (one NPH, one subdural hematoma and two with depression) in dementia group (1.7%).

In our study we focus on etiology of reversible dementias admitted at our hospital and their outcome.

II. Material And Methods

It was a Retrospective study based on review from hospital database of Reversible dementia patients admitted at our hospital from October 2015 to September 2020 and appropriate statistical analysis done. Ethical clearance obtained prior to study.

The aim of the study was to assess the prevalence and etiology of Reversible dementia patients admitted in our hospital and their outcome.

Patients presenting with memory dysfunction with or without associated other symptoms like behavioral changes, psychiatric symptoms, gait difficulty, involuntary movements, seizures were included in the study. History of recent onset head injury were ruled out. Patients were then subjected to detailed clinical assessment.

Study procedure:

A detailed medical history with onset and progression of symptoms of memory impairment, executive dysfunction, behavioral changes, apraxia, aphasia, difficulty in recognition, gait difficulty, falls, slowness, were asked. History of fluctuations in symptoms were noted.

Associated symptoms like fever, headache, vomiting, weakness, seizures, Urinary incontinence, diplopia, dysphagia, dysarthria, involuntary movements were noted.

Associated systemic symptoms like polyarthritis, redness of eyes, malar rash, dry eyes, oral ulcer, weight gain or weight loss were documented.

Associated psychiatric symptoms like low mood, delusions, hallucinations, suicidal thoughts and other behavioral changes documented.

History of intake of long term and short-term medications for neurological /psychiatric disease were documented and family history of diseases documented from clinical data.

History of alcoholism and drug intake/other toxic abuse, high risk behavior noted.

General physical Examination, Detailed CNS examination and systemic examination done as per protocol.

Cognitive assessment done with Mini Mental status examination (MMSE) and then detailed cognitive assessment done.

Patients after detailed history and clinical examination were subjected to routine blood examinations which includes complete blood count, metabolic work up, Thyroid function test, Anti TPO , serum vitamin B12 assay , HIV/VDRL ,serum ANA. All patients were subjected to MRI brain with contrast study, Electroencephalogram, CSF study. Special tests like serum autoimmune profile, paraneoplastic panel of encephalitis were done in suspected cases.

III. Results

384 patients were enrolled in the study .Of which 302 (78.6%) patients were of irreversible progressive neurodegenerative dementia(ID) and 82 (21.4%) patients were of potentially reversible dementia(PRD).

Distribution of patients with irreversible dementias (ID), and potentially reversible dementias (PRD), by gender.

Gender	ID(n=302)	PRD(n=82)
Male	185 (61.3%)	46 (56.1%)
Female	117 (38.7%)	36 (43.9%)

Distribution of patients with potentially reversible dementia by age.

AGE	ID(n=302)	PRD(n=82)
<60	17 (5.6%)	47 (57.3%)
>60	285 (94.4%)	35 (42.7%)

Etiology and distribution of patients seen with potentially reversible dementia.

Etiology	Number of patients (n=82)
Tubercular meningitis	3 (3.7%)
Partially treated meningitis	8 (9.8%)
Vitamin B12 deficiency	5 (6.1%)
Normal pressure hydrocephalus	8 (9.8%)
Chronic sub dural hemorrhage	7 (8.5%)
Frontal meningioma	1 (1.2%)
Depression	6 (7.3%)
Hypothyroidism	5 (6.1%)
Hashimotos encephalopathy	10 (12.2%)
Hyponatremia	12 (14.6%)
Wilson's disease	1 (1.2%)
CNS vasculitis	5 (6.1%)
Autoimmune encephalitis	4 (4.9%)
Wernickes encephalopathy	7 (8.5%)

Etiology and gender distribution of patients seen with potentially reversible dementia.

Etiology	Gender	
	Male (n=46)	Female (n=36)
Tubercular meningitis	3 (6.5%)	0 (0.0%)
Partially treated meningitis	5 (10.8%)	3 (8.3%)

Vitamin B12 deficiency	2 (4.3%)	3 (8.3%)
Normal pressure hydrocephalus	6 (13.1%)	2 (5.6%)
Chronic sub dural hemorrhage	6 (13.1%)	1 (2.8%)
Frontal meningioma	1 (2.2%)	0 (0.0%)
Depression	2 (4.3%)	4 (11.1%)
Hypothyroidism	0 (0.0%)	5 (13.9%)
Hashimotos encephalopathy	6 (13.1%)	4 (11.1%)
Hyponatremia	7 (15.2%)	5 (13.9%)
Wilson's disease	1 (2.2%)	0 (0.0%)
CNS vasculitis	0 (0.0%)	5 (13.9%)
Autoimmune encephalitis	0 (0.0%)	4 (11.1%)
Wernickes encephalopathy	7 (15.2%)	0 (0.0%)

Etiology and age distribution of patients seen with potentially reversible dementia.

Etiology	Age	
	Age<60 (n=47)	Age >60 (n=35)
Tubercular meningitis	3 (6.3%)	0 (0.0%)
Partially treated meningitis	6 (12.8%)	2 (5.7%)
Vitamin B12 deficiency	2 (4.3%)	3 (8.6%)
Normal pressure hydrocephalus	0 (0.0%)	8 (22.7%)
Chronic sub dural hemorrhage	0 (0.0%)	7 (20.0%)
Frontal meningioma	1 (2.1%)	0 (0.0%)
Depression	6 (12.8%)	0 (0.0%)
Hypothyroidism	5 (10.6%)	0 (0.0%)
Hashimotos encephalopathy	6 (12.8%)	4 (11.4%)
Hyponatremia	2 (4.3%)	10 (28.7%)
Wilson's disease	1 (2.1%)	0 (0.0%)
CNS vasculitis	5 (10.6%)	0 (0.0%)
Autoimmune encephalitis	4 (8.5%)	0 (0.0%)
Wernickes encephalopathy	6 (12.8%)	1 (2.9%)

IV. Discussion

Neurodegenerative diseases presenting with dementia are common. However, as per our observational study, reversible dementia are also relatively common in clinical practice. Reversible dementia patients are common in age group less than 60 yrs in our study, but does not rule out in elderly patients. Elderly patients diagnosed with reversible treatable dementia were of 42.7% in our study, slightly lesser than younger age group which contributed to 57.3%. Majority of studies shows presentation of reversible dementia in younger age group, but a detailed evaluation is always necessary in elderly age group also.

As per our study infective, metabolic, nutritional causes were common, which contributed to 61% of total patients. In older age group these contributed to 57.3%. Depression contributed to 7.3% of patients, and were seen in age below 60 yrs, hence if all organic neurological diseases were ruled out, it is mandatory to do a detailed psychological assessment.

Patients with subacute/chronic Subdural hemorrhage and normal pressure hydrocephalus showed modest recovery post surgically and on follow up. Other patients (infective, metabolic, autoimmune, vasculitis) had good recovery on follow up.

Recovery were better with younger age group and with earlier medical management.

With advance in medical diagnostics, the switch from irreversible to reversible dementia will be more in coming years and more research is required in this field.

V. Conclusion

Reversible dementia patients presenting in neurological clinics are common. Though it is more common in younger age group, but cannot totally rule out in elderly group. A systematic approach in medical diagnostics required to diagnose and treat appropriately at an early stage as they have good prognosis.

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LEGENDS

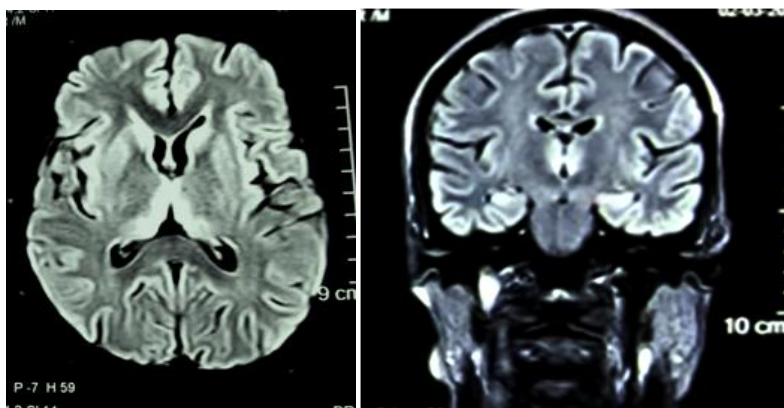


Fig-1-MRI brain of a patient with wernickes encephalopathy showing Flair hyperintensities in medial thalami and peri aqueductal area.

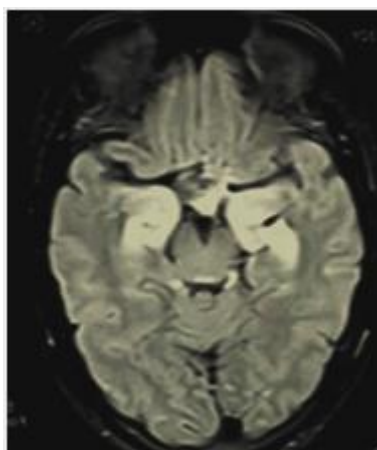


Fig 2-MRI brain of a patient with autoimmune encephalitis with hyperintensities at bilateral medial temporal lobes.