



## Neuropsychiatric Manifestations in Patients with Dementia

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### ABSTRACT

Neuropsychiatric symptoms (NPS) are a common accompaniment of dementia. These include agitation, depression, apathy, delusions, hallucinations, and sleep impairment. These symptoms have serious adverse consequences for patients and caregivers. Recognizing and treating NPS at the time of diagnosis could promote the well-being of persons with dementia and their families. This study is aimed to recognize various neuropsychiatric manifestations in patients with dementia and address them accordingly. All patients age > 18 years fulfilling Diagnostic and Statistical Manual of Mental Disorders (DSM - 5) criteria for Major Neurocognitive Disorders were included in this study. Apathy was the most common neuropsychiatric symptom across all dementia types followed by sleep disturbances and irritability. Depression was a treatable neuropsychiatric symptom. Identifying neuropsychiatric symptoms and treating them early might help in reducing caregiver distress.

**Keywords:** Neuropsychiatric symptoms (NPS), Diagnostic and Statistical Manual of Mental Disorders (DSM), Apathy, Depression.

### INTRODUCTION

Neuropsychiatric symptoms (NPS) are a common accompaniment of dementia<sup>1</sup>. These include agitation, depression, apathy, delusions, hallucinations, and sleep impairment<sup>2</sup>. These symptoms have serious adverse consequences for patients and caregivers, such as greater impairment in activities of daily living<sup>3</sup>, more rapid cognitive decline<sup>4</sup>, worse quality of life<sup>5</sup>, earlier institutionalization<sup>6</sup>, and greater caregiver depression<sup>7</sup>. Thus, the neuropsychiatric accompaniments of dementia are serious conditions that are increasingly becoming a focus of attention. Recognizing and treating NPS at the time of diagnosis and throughout the course of the disease could promote the well-being of persons with dementia and their families.

#### Aim and Objectives of the Study:

To study various neuropsychiatric manifestations in patients with dementia.

### MATERIALS AND METHODS

All patients age > 18 years fulfilling DSM V criteria for Major Neurocognitive Disorders were included in this study. Patients with primary psychiatric illness, drug induced psychiatric illness, post traumatic brain injury were excluded from the study.

For each patient, detailed history and neurological exam was undertaken. The duration of dementia and its severity was assessed using Clinical Dementia Rating (CDR) scale. After detailed neuropsychological evaluation, each patient was assessed with Neuropsychiatry Inventory Questionnaire. Imaging of Brain with MRI/CT (Plain and Contrast enhanced) was done. Blood investigations included complete blood count, renal function tests, liver

function tests, thyroid function tests, serum vitamin B12, HIV, HBsAg, HCV, VDRL. Cerebrospinal fluid (CSF) analysis which included cytology, proteins, sugars, HSV, Cryptococcus, VDRL were done whenever appropriate. Microsoft Excel 2010 was used to analyse the data.

### RESULTS

A total of 67 patients with dementia were included in the study. Most common cause of dementia was Alzheimer's disease (n = 21) followed by Fronto temporal Dementia (n = 20) followed by Vascular dementia (n = 9). Average age of onset in Fronto temporal Dementias is earlier (65.2 +/- 6.1 years) compared to Alzheimer's Disease (72.9 +/- 5.4 years). Patients with HIV dementia had earliest age of onset (48 +/- 1.4 years). Patients with Possible CJD and NPH had higher CDR scores compared to patients with AD and FTD.

In Alzheimer's disease, most common neuropsychiatric symptom is apathy (54.5%) followed by anxiety (27%), night time behaviour abnormalities (22.7%), irritability (22.7 %). In Frontotemporal dementia, most common neuropsychiatric symptom is appetite changes (65%) followed by apathy (50%), disinhibition (50%) and agitation (45%). In Vascular dementia, most common neuropsychiatric symptom is depression (77.8%) followed by sleep disturbances (55.5%) and apathy (44.4%). In Parkinson's disease dementia, most common neuropsychiatric symptom is apathy followed by irritability, night time behaviour abnormalities and motor disturbances. Apathy is the most common neuropsychiatric manifestation of all dementias in this study followed by sleep disturbances and irritability and agitation.



## DISCUSSION

Neuropsychiatric symptoms (NPS) affect almost all individuals with dementia (97%) over the course of the disease<sup>1</sup>, and although they fluctuate<sup>8</sup>, they rarely disappear<sup>9</sup>. The effects on both patients and caregivers are severe: they are associated with impairment in activities of daily living, poor quality of life, earlier institutionalization, accelerated disease progression, increased mortality, caregiver stress, and increased cost of care<sup>10</sup>.

### Neuropsychiatric symptoms in Alzheimer's disease:

Both delusions and hallucinations are reported in AD. Among 22 Alzheimer's disease (AD) patients in our study, only 4 patients (18%) had both delusions and hallucinations. All of them had visual hallucinations and one patient had both visual and auditory hallucinations. However, in a study of 124 demented patients, 67% had psychotic symptoms<sup>11</sup>.

Agitation/aggression is a common behavioral symptom of AD. It is clinically significant in 15 - 20% of people with dementia in a community setting and in nearly 50% of people in care facilities. Only 3 patients (14%) had agitation in this study.

The Apathy Evaluation Scale is commonly used to assess apathy across the AD continuum. The NPI also includes an apathy sub scale, but it has not yet been validated for use on its own. Apathy can occur alone or as a symptom of depression<sup>12</sup>. Apathy was diagnosed in 37% of the AD patients, in 32% of the depressed patients, and in none of the healthy controls. A Latin American study<sup>7</sup> examined 60 AD patients with the NPI, reporting a frequency of apathy of 53%. Only 54.5% patients had apathy in this study. This difference has arisen because of small study population and different scale to assess apathy (NPI - Q instead of Apathy Evaluation Scale) was used.

Depression is found in 16% in population-based AD studies, and 44.3% in hospital-based studies<sup>13</sup>. In this study, 18 % patients had depression. More severe neuropathology (tau, amyloid, and vascular disease) is seen in patients with AD with depression compared to those without. These patients also show severe loss of serotonin receptors and serotonin transporter binding, which may have implications for treatment<sup>14</sup>. In a study by CJ Anor et al, 27% patients with AD had anxiety which is similar to this study (27%).

### Neuropsychiatric Features of Frontotemporal Dementia (FTD):

Unlike AD, FTD is usually a presenile disorder with an average age at onset of around 57 years and a usual range of 51 to 63 years. In this study the age ranged between 58 - 78 years. The incidence of aggression and agitation is seen in 45% in this study which is similar to that seen in study by Ramaram et al.<sup>15</sup> Apathy is seen in almost 100% of the patients in literature, but only 50 % of patients in this study. Disinhibition was present in 50 % of patients in

our study, which is comparable to that described in literature (52%).

### Neuropsychiatric manifestations in Vascular Dementia (VaD):

Agitation, apathy, mood changes, day-night cycle disturbance, hallucinations, and hostile behaviour are among the most prominent NPS in patients with vascular dementia. Depression was the most common symptom in this study (77.8 %) when compared to study by Anor et al (48.3 %), PY Chiu et al (46 %) and MA Santos et al (5.6 %). Sleep disturbances were the next most common symptoms and incidence was similar in all studies i.e., this study (55.5 %), Anor et al (56.7 %) and PY Chiu et al (61%).

### Neuropsychiatric manifestations in Normal Pressure Hydrocephalus (NPH):

Apathy was the most common neuropsychiatric symptom in our study (66.7%) which is similar to study by H Kazui et al<sup>16</sup>. Aberrant motor activity and irritability (50%) are the next most common symptoms.

## CONCLUSION

Most common type of dementia was Alzheimer's disease followed by Frontotemporal dementia and Vascular dementia. Neuropsychiatric symptoms were prevalent in various dementia subtypes and each patient had multiple neuropsychiatric symptoms. Apathy was the most common neuropsychiatric symptom across all dementia types followed by sleep disturbances and irritability. Depression was a treatable cause which is the most common neuropsychiatric manifestation in vascular dementia. Identifying neuropsychiatric symptoms and treating them early might help in reducing caregiver distress.

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