



# Utilization behavior with catatonia suggests underlying behavioral-variant frontotemporal dementia

Sara Culleton, MD, PhD<sup>a</sup>; Elizabeth Hathaway, MD<sup>a</sup>; Maria Poor, MD<sup>b</sup>; Sophia Wang, MD<sup>a,c</sup>; Emily Holmes, MD, MPH<sup>a</sup>



a Department of Psychiatry, Indiana University School of Medicine; b Richard L Roudebush VA Medical Center, Indianapolis, IN; c Indiana Alzheimer's Disease Research Center, Indiana University School of Medicine, Indianapolis, IN

## ABSTRACT

Catatonia is a complex syndrome with a multitude of possible causes. In the elderly, it can be a presenting problem in dementias, including frontotemporal dementia (FTD); however, the symptom overlap between catatonia and frontotemporal lobe dysfunction (FTLD) can be challenging for diagnosis. Fortunately, one category of FTLD symptoms, utilization behavior, is not a feature of catatonia and can be discerned even among the catatonia symptoms. We report a case of catatonia in which direct testing for utilization behavior (appropriate use of an object in an inappropriate situation) after equivocal neuroimaging prompted further workup for the underlying cause: behavioral-variant FTD (bvFTD) with *C9orf72* repeat expansion. For patients with catatonia and some reason to suspect bvFTD, especially if workup is equivocal, direct testing for utilization behavior may expedite diagnosis and discussions of goals of care.

## INTRODUCTION

### Catatonia and its presentation in the elderly

- syndrome of motor, psychiatric, and autonomic symptoms
- often requires interdisciplinary involvement but still under-diagnosed
- heterogeneous signs and symptoms, as well as causes
- in elderly, most likely medical cause (versus psychiatric), and most likely neurologic disease (1) such as dementia, encephalitis, and stroke
- possible risk factors in geriatric pts: vascular disease, pre-existing psychiatric dx (especially MDD), neuroleptic exposure (2)
- rates of catatonia due to dementia reported at ~43% (3)

### FTLD, (bv)FTD, and catatonia

- FTLD refers to multiple syndromes with pathology in the frontal and temporal lobes; one syndrome, FTD, is one of the most prevalent types of early-onset (< age 65) dementia; behavioral-variant FTD (bvFTD) has ~50-70% prevalence in USA among all FTD diagnoses (4)
- most common genetic cause of FTD, *C9orf72* repeat expansion, can present with late-onset psychosis and/or catatonia (5)
- CLINICAL PROBLEM:** symptoms of catatonia per the Bush-Francis Catatonia Rating Scale (BFCRS) overlap with symptoms of bvFTD (6)

### Utilization behavior

- a type of FTLD symptom NOT adequately covered by the BFCRS
- complex sets of movements involving appropriate use of an object (i.e. appropriate for the object itself) in an inappropriate situation (i.e. in which the object is not normally used); triggered by placing object either directly in the patient's hands or generally within the patient's field of vision (7)
- example: placing a paper clip in the hands of a patient who subsequently reaches for his handkerchief and clips two of its corners together
- not a feature of catatonia per our literature review
- HYPOTHESIS:** utilization behavior could be used to differentiate between catatonia due to an underlying FTLD syndrome, such as bvFTD, versus catatonia due to other conditions

## CASE PRESENTATION

### History

- Mr. X: 67 yo M, hx HTN, prostate cancer (s/p TURP and radiation), alcohol use d/o in remission, and cannabis use
- dx w/ MCI 2 yrs p/t first encounter; first lifetime inpatient psychiatric hospitalization 1 mo prior
- symptoms included auditory hallucinations, paranoid and persecutory delusions, and bizarre behavior
- diagnosed with unspecified psychosis, started on olanzapine; hypersomnolent, irritable, and apathetic

### Admission #1 – 3 days

- admitted to Medicine service AMS
- was unresponsive, shaking per wife; also maintained arm posture after she moved him
- BFCRS = 9: frequent staring, psychomotor retardation but w/ impulsive movements, impoverished speech, flat affect, catalepsy
- DDx: stroke, seizure, medication side effects, dementia w/ behavioral disturbance, catatonia due to dementia versus depression versus other cause
- labs, chest X-ray, EEG, and head CT/CTA were unremarkable
- DC to home w/ same doses of donepezil and olanzapine, started on sertraline
- outpatient FDG-PET scan performed (equivocal)

### Admission #2 – 32 days (2 wks after DC)

- sudden inability to walk, minimally interactive, and increasingly prone to falls x 2-4 days few days; also "eating everything" when not withdrawn (wife

- BFCRS = 13: mutism, staring, perseverative movements, diaphoresis
- diagnosis: catatonia due to unknown etiology
- brain MRI, serum labs, and CSF testing for infectious and autoimmune etiologies were unremarkable
- home psychotropic meds held, and lorazepam challenge was initiated
- check for utilization behavior:** while he was preparing his coffee, we placed a jelly packet on the side of his tray → he picked up the jelly, opened it, and stirred it into his coffee → drank it
- this, and extremely methodical nature of meal preparation, suggestive of FTLD
- updated dx: catatonia secondary to bvFTD
- initial improvement (BFCRS to 0) w/ IV lorazepam → worse upon switching to = PO dosing (BFCRS = 12) → d/c Ativan, 6 sessions of ECT → resolution
- DC home w/ sertraline only; donepezil d/c'd since it can worsen bvFTD behaviors (4)

### Afterward

- 2 months after DC, admitted to Psych for dementia with behavioral disturbance, then 3x over next 3mos
- some grimacing, posturing, agitation, and mutism noted, but ECT not resumed by inpatient team
- genetic testing: + for *C9orf72* repeat expansion
- more family history obtained, pointing to undiagnosed bvFTD in Mr. X's father and sister → family referred to genetic counseling
- placed in extended care facility on hospice → ~1.5 years of clinical stability with occasional medical and psychiatric admissions → off hospice → decline in last 6 months → back on hospice

## DISCUSSION

- case underscores difficulty finding cause of catatonia, variability of symptom course, and challenges of treatment
- catatonia d/t bvFTD may NOT resolve w/ Ativan or ECT
- similar neurobiology between catatonia and bvFTD: derangements in pathways and circuits involving frontal lobes (8)
- this case: history of late-onset psychosis + equivocal FDG-PET → testing for utilization behavior → positive → increased suspicion for bvFTD; symptom relapse after ECT + pattern of treatment resistance → genetic testing → *C9orf72* repeat expansion found
- CONCLUSION:** any healthcare professional with experience in evaluating catatonia and FTLD should consider testing patients specifically for utilization behavior; quick, free, and fascinating to witness when present, and requires no skill from the practitioner
- if test early on, could raise suspicion for bvFTD earlier in course, leading to sooner medication changes, neuroimaging, genetic testing, and goals-of-care discussions
- future directions: more reporting of cases of utilization behavior +/- catatonia (confirm distinctness from catatonia); prospective cohort studies testing for utilization behavior in patients with catatonia, with presence or absence of bvFTD/FTLD confirmed by imaging, genetic testing, and brain autopsy; develop and validate a measure of this behavior for standard use across multiple clinical settings

## REFERENCES

1. Oldham 2018. The Probability That Catatonia in the Hospital has a Medical Cause and the Relative Proportions of Its Causes: A Systematic Review. *Psychosomatics*, 59(4), 333-340.
2. Serra-Mestres & Jaimes-Albornoz 2018. Recognizing Catatonia in Medically Hospitalized Older Adults: Why It Matters. *Geriatrics* (Basel), 3(3).
3. Sharma et al. 2017. Catatonia in Patients with Dementia Admitted to a Geriatric Psychiatry Ward. *J Neurosci Rural Pract*, 8(Suppl 1), S103-S105.
4. Bang et al. 2015. Frontotemporal dementia. *Lancet*, 386(10004), 1572-1582.
5. Hsiao 2014. Neurodegenerative and psychiatric overlap in frontotemporal lobar degeneration: a case of familial frontotemporal dementia presenting with catatonia. *Int Psychogeriatr*, 26(2), 345-347.
6. Bush et al. 1996. Catatonia. I. Rating scale and standardized examination. *Acta Psychiatr Scand*, 93(2), 129-136.
7. Pandey & Sarma 2015. Utilization behavior. *Ann Indian Acad Neuro*, 18(2), 235-237.
8. Fricchiome & Beach 2019. Cingulate-basal ganglia-thalamo-cortical aspects of catatonia and implications for treatment. *Handb Clin Neurol*, 166, 223-252.