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Changes in clinical manifestation of fibromyalgia syndromes after Alzheimer's disease diagnosis

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ABSTRACT

Fibromyalgia syndrome (FMS) is defined by chronic widespread pain persisting for more than 3 months without an apparent physical cause. The prevalence of FMS peaks between 50 and 70 years old, and it can be difficult to diagnose and treat due to other comorbid conditions. Recent work has suggested that neurodegenerative conditions can be complicated by chronic pain. This case study presents four patients with FMS residing in nursing homes. In all four cases, with the progression of Alzheimer's disease, patients saw improvements in pain syndromes, albeit to different degrees, and marked improvements in mobility. All four patients also developed challenging behavioral and psychological symptoms of dementia requiring psychotropic prescriptions.

KEYWORDS Alzheimer's dementia; chronic pain; fibromyalgia; nursing home

Fibromyalgia syndrome (FMS), a condition of central sensitization, is defined by chronic widespread pain, stiffness of muscles and joints, and fatigue persisting for >3 months without an apparent physical cause.[1] Some individuals with FMS may have other unexplained physical health symptoms, and there is evidence of substantial psychiatric comorbidity.[2] The prevalence of FMS peaks between 50 and 70 years old,[3] and the presentation of FMS can be influenced by a wide variety of physical and psychosocial factors.[4] Recent work has suggested that neurodegenerative conditions can be complicated by chronic pain.[5] This case series presents four patients with FMS residing in a 44-bed nursing home and describes how the diagnosis and progression of Alzheimer's disease (AD) affected the manifestation of their FMS.

CASE DESCRIPTIONS

Four patients, three women and one man, with confirmed diagnoses of FMS predating a dementia diagnosis were admitted to a nursing home where clinical care is provided by a general practice team. All patients were admitted after family members were unable to care for them at home due to AD progression. Patients were diagnosed by a geriatric psychiatrist using the International Classification of Disease–10 criteria.[6] Diagnosis involved clinical assessment and physical examination, in an outpatient clinical setting or at home, alongside laboratory workup, computed tomography, and formal cognitive testing.

Admissions occurred from January 2019 onwards. Patient records were retrospectively reviewed for 12 months from admission to the nursing home, and baseline characteristics (age, gender, age at FMS and AD diagnoses, comorbid diagnoses, and psychotropic medication prescriptions) were recorded. All patients or their caregivers were informed of the purpose of this retrospective analysis of case records and consented to the information being used and published. Psychotropic medications were recorded at the time of admission and at death, using a standardized definition of psychotropic medications.[7] *Table 1* summarizes pertinent clinical characteristics and psychotropic prescriptions.

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Table 1. Pertinent clinical characteristics of four patients

	Case 1	Case 2	Case 3	Case 4
Age (years) at admission to nursing home	85	79	74	90
Gender	Male	Female	Female	Female
Age of FMS onset	67	70	65	75
Age of AD onset	82	75	72	85
Comorbidities	COPD, diverticulitis, migraine, osteoarthritis, BPH, hypertension, pacemaker—third-degree heart block, T2DM	Osteoarthritis, IHD, hypertension, breast cancer (remission), CKD stage 3b, depression	Hypertension, osteoporosis, IHD, osteoarthritis, venous eczema, insomnia, T2DM	Psoriasis, hypertension, ARMD, osteoporosis, CKD stage 4, insomnia, generalized anxiety disorder
Psychotropic medications on admission	None	Citalopram 10 mg OD; melatonin 4 mg Nocte	Zopiclone 15 mg Nocte	Citalopram 10 mg OD; nitrazepam 2.5 mg Nocte
Psychotropic medications at 12 months	Sertraline 100 mg OD; zopiclone 3.75 mg Nocte; lorazepam 500 mcg BD; amitriptyline 10 mg Nocte	Trazodone 50 mg Nocte; citalopram 30 mg OD	Citalopram 20 mg OD; zopiclone 15 mg Nocte; mirtazapine 30 mg Nocte; lorazepam 500 mcg PRN up to once daily for distress	Citalopram 30 mg OD; mirtazapine 45 mg Nocte; zopiclone 7.5 mg Nocte

AD indicates Alzheimer's dementia; ARMD, age-related macular degeneration; BD, twice daily; BPH, benign prostatic hyperplasia; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; FMS, fibromyalgia syndrome; IHD, ischemic heart disease; Nocte, at night; OD, once daily; PRN, as needed; T2DM, type 2 diabetes.

For each patient, pain was assessed using the Pain Assessment in Advanced Dementia,[8] the widespread pain index validated for FMS,[9] and cognition was quantified using the Six-Item Cognitive Impairment Test,[10] with nursing home care staff recording mobility assessments on a quarterly basis in line with nursing home policy. *Table 2* summarizes changes in these domains over time.

Alongside documented deterioration in cognition and improvement in pain score and mobility, all four patients developed challenging behavioral and psychological symptoms of dementia (BPSD). Case 1 developed a moderate to severe depressive illness within 6 months of admission, with marked anxiety disorder with insomnia. More broadly, there were family concerns regarding apathy and social withdrawal. These symptoms were managed with the introduction of antidepressants, as well as anxiolytics with the support of the local psychogeriatric community team. Regular input from the community psychiatric nursing team was required to engage with symptoms of severe anxiety disorder and panic attacks. The family reported no premorbid psychiatric diagnoses.

Over the initial period of admission, Case 2's depressive disorder and insomnia deteriorated, which responded well to an increase in her citalopram and change from melatonin to trazodone. Nursing home staff voiced concerns about paranoia of her food and tablets being poisoned in the absence of delirium, but these responded with nondrug measures. Case 3 developed moderate to severe depressive disorder after admission that responded well to alterations in her antidepressant medications. However, she developed delusions regarding some staff at the nursing home leading to challenging and aggressive behavior; although this was generally managed well with nondrug measures, lorazepam was required at times. Case 4 also required upward titration of her antidepressant and addition of another agent to manage physical symptoms associated with her depressive disorder.

For all patients, psychotropic prescribing was supported by the primary care geriatric psychiatry liaison team, who provided advice regarding medications to utilize for different patients based upon their presentation and potential for iatrogenic harm.

DISCUSSION

This small case series has isolated two findings of interest. First, in all four cases, with the progression of AD, patients saw improvements in pain syndromes, albeit to different degrees, and marked improvements in mobility. It has been reported that patients with AD and chronic pain are likely to feel diminishing levels of pain as a result of cognitive decline.[11] Generally, pain threshold tolerance is increased with advancing AD, but the nature of this relationship can be challenging to discern.[12] A single case study reported that a 71-year old woman with FMS and AD noted improvements in FMS symptoms and mobility with cognitive decline.[13] A Japanese case series of seven older patients with FMS and neurocognitive dysfunction, which included single-photon emission computed tomography imaging, found that central sensitization may be a risk factor for widespread pain syndromes in older patients with cognitive dysfunction.[12] The relationship between

Table 2. Changes in pain, cognitive, and mobility domains over time

Domain	Case 1	Case 2	Case 3	Case 4
Pain assessment in advanced dementia				
Month 0	9	10	10	8
Month 4	9	8	7	6
Month 8	8	7	7	5
Month 12	6	7	5	4
Six-item Cognitive Impairment Test				
Month 0	21	22	24	21
Month 4	25	23	24	24
Month 8	28	28	28	24
Month 12	28	28	28	26
Widespread pain index				
Month 0	19	17	16	19
Month 4	19	16	15	18
Month 8	16	14	12	16
Month 12	12	14	10	14
Mobility				
Month 0	2 staff (WC)	1 staff (ZF)	2 staff (WC)	2 staff (WC)
Month 4	1 staff (ZF)	1 staff (ZF)	1 staff (ZF)	2 staff (WC)
Month 8	1 staff (ZF)	Walking unaided	1 staff (ZF)	2 staff (WC)
Month 12	1 staff (ZF)	Walking unaided	1 staff (ZF)	1 staff (ZF)
Pain	Improved	Improved	Improved	Improved
Dementia	Progression	Progression	Progression	Progression

WC indicates wheelchair; ZF, Zimmer frame.

the disease process of AD and its impact upon FMS requires further review, in particular whether alterations in pain and mobility are typical in this patient group and the prevalence of FMS among older patients with cognitive dysfunction.

Second, all four patients developed challenging BPSD requiring psychotropic prescriptions. A systematic review indicated that 82% of residents of nursing homes exhibited at least one neuropsychiatric symptoms, with agitation and apathy being most prevalent.[14] General rates of psychiatric diagnoses within the nursing home where all patients resided were 14%, 6.8%, and 9% for pure depression, pure anxiety, and mixed depression and anxiety disorder. This is in keeping with internationally reported levels.[15,16] However, the symptoms experienced by these patients were marked, caused considerable impact on quality of life, and required more significant input in terms of drug and nondrug approaches compared to those of other residents with the same psychiatric diagnoses. There is substantial lifetime psychiatric comorbidity in individuals with fibromyalgia,[2] with this negatively impacting the severity and course of FMS,[17] but the nature of the relationship between FMS and BPSD, an almost universal phenomenon in dementia,[18] has not been explored to date.

There are inherent limitations in extrapolating from small case series without age-matched controls. More specifically, the widespread pain index has not been validated in a dementia population. In relation to the main findings of reductions in pain and improvements in mobility, it could be suggested that patients experienced less pain within the nursing home environment than they did prior to admission. However, this did not appear to be the case due to the level of engagement within the nursing home and based on review of admission reports.

This small case series has isolated that progressive dementia syndromes may lead to improvements in pain experiences with FMS, postulated to be related to damage to cerebral structures and neuronal processing, alongside the potential that FMS patients with dementia may experience troublesome BPSD. Within the locality, there are efforts to perform prospective clinical research in this area to further interrogate the nature of the relationship between FMS, BPSD, and AD and to investigate the frequency of FMS in the elderly population. More broadly, the relationship between patients with FMS with preexisting psychiatric diagnoses and their risk of developing dementia syndromes is being actively researched.

1. Wolfe F, Clauw DJ, Fitzcharles MA, et al. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. *Arthritis Care Res (Hoboken))*. 2010;62(5):600–610. doi:10.1002/acr.20140.
2. Arnold LM, Hudson JI, Keck PE, Auchenbach MB, Javaras KN, Hess EV. Comorbidity of fibromyalgia and psychiatric disorders. *J Clin Psychiatry*. 2006; 67(08):1219–1225. doi:10.4088/JCP.v67n0807.
3. Branco JC, Bannwarth B, Failde I, et al. Prevalence of fibromyalgia: a survey in five European countries. *Semin Arthritis Rheum*. 2010; 39(6): 448–453. doi:10.1016/j.semarthrit.2008.12.003.
4. Clauw DJ. Fibromyalgia: a clinical review. *JAMA*. 2014; 311(15): 1547–1555. doi:10.1001/jama.2014.3266.
5. Borsook D. Neurological diseases and pain. *Brain*. 2012;135(Pt 2): 320–344. doi:10.1093/brain/awr271.
6. World Health Organization. *The ICD-10 Classification of Mental and Behavioural Disorders: Clinical Descriptions and Diagnostic Guidelines*. Geneva, Switzerland: World Health Organization; 1992.
7. Olazaran J, Valle D, Serra JA, Cano P, Muniz R. Psychotropic medications and falls in nursing homes: a cross-sectional study. *J Am Med Dir Assoc*. 2013;14(3):213–217. doi:10.1016/j.jamda.2012.10.020.
8. Warden V, Hurley AC, Volicer L. Development and psychometric evaluation of the Pain Assessment in Advanced Dementia (PAINAD) scale. *J Am Med Dir Assoc*. 2003;4(1):9–15. doi:10.1097/01.JAM.0000043422.31640.F7.
9. Galvez-Sánchez CM, de la Coba P, Duschek S, Reyes Del Paso GA. Reliability, factor structure and predictive validity of the Widespread Pain Index and Symptom Severity Scales of the 2010 American College of Rheumatology Criteria of Fibromyalgia. *J Clin Med*. 2020; 9(8):2460. doi:10.3390/jcm9082460.
10. Brooke P, Bullock R. Validation of a 6-item cognitive impairment test with a view to primary care usage. *Int J Geriat Psychiatry*. 1999;

14(11):936–940. doi:10.1002/(SICI)1099-1166(199911)14:11<936::AID-GPS39>3.0.CO;2-1.
11. Pickering G, Eschalier A, Dubray C. Pain and Alzheimer's disease. *Gerontology*. 2000;46(5):235–241. doi:10.1159/000022166.
12. Nishioka K, Hayashi T, Suzuki M, et al. Fibromyalgia syndrome and cognitive dysfunction in elderly: a case series. *Int J Rheum Dis*. 2016; 19(1):21–29. doi:10.1111/1756-185X.12734.
13. Hughes LD. Changes in the clinical manifestation of fibromyalgia in an individual with dementia. *J Am Geriatr Soc*. 2013;61(12): 2260–2261. doi:10.1111/jgs.12575.
14. Selbaek G, Engedal K, Bergh S. The prevalence and course of neuropsychiatric symptoms in nursing home patients with dementia: a systematic review. *J Am Med Dir Assoc*. 2013;14(3):161–169. doi:10.1016/j.jamda.2012.09.027.
15. Gaboda D, Lucas J, Siegel M, et al. No longer undertreated? Depression diagnosis and antidepressant therapy in elderly long-stay nursing home residents, 1999 to 2007. *J Am Geriatr Soc*. 2011;59(4): 673–680. doi:10.1111/j.1532-5415.2011.03322.x.
16. Robert S, Hotopf M, Dewey M, et al. Current prevalence of dementia, depression and behavioural problems in the older adult care home sector: the South East London Care Home Survey. *Age Ageing*. 2014;43(4):562–567. doi:10.1093/ageing/afu062.
17. Arnold LM. Management of fibromyalgia and comorbid-psychiatric disorders. *J Clin Psychiatry*. 2008;69(Suppl 2):14–19.
18. Robert PH, Verhey FR, Byrne EJ, et al. Grouping for behavioral and psychological symptoms in dementia: clinical and biological aspects. Consensus paper of the European Alzheimer Disease Consortium. *Eur Psychiatry*. 2005; 20(7):490–496. doi:10.1016/j.eurpsy.2004.09.031.

Avocations

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