

ORIGINAL PAPERS

Exploring the relationship between pain management and neuropsychiatric symptoms in patients with moderate and severe dementia receiving palliative care: retrospective study

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Abstract

Background: Dementia is a neurodegenerative disease that can affect a patient's memory, thinking and behavior. Individuals with dementia may have physical and psychological pain as the disease progresses, and pain management can be challenging since these individuals may be more sensitive to pharmaceutical side effects and have trouble adhering to a treatment plan.

Objective: The aim of this research is to evaluate the practice of pain management in patients with moderate-severe dementia as well as to assess the association between pain-related diagnostics and neuropsychological symptoms.

Methods: The retrospective analysis involved reviewing observation sheets of dementia patients admitted to the palliative care department within the period of January 1, 2021, to December 31, 2022.

Results: 102 patients were included in the study, aged 46-97 years (mean: 78.28±10.76 years) with admissions ranging from 1-12 (mean: 3.05±3.29). Hospitalization duration varied from 2-88 days (mean: 39.70±22.20 days). MMSE scores ranged from 5-18 (mean: 9.10±2.90).

Among the group, 57 patients experienced pain, with 52.9% requiring analgesic treatment and 3.9% not needing any therapy. Non-pharmacological treatments were recommended for <10% of patients.

The correlation between pain cause and psychomotor agitation was statistically insignificant ($p=0,188$).

Conclusion: Psychomotor agitation manifested during hospitalization by patients with moderate-severe dementia could not be correlated as a cause of pain symptoms, but pain management was based on comorbidities, assessment criteria and the patient's clinical profile.

Key words: Dementia, neurodegenerative disease, pain management, psychomotor agitation palliative care

Rezumat

Introducere: Demența afectează memoria, gândirea și comportamentul. Pacienții cu demență pot avea dureri fizice și psihologice, dificultate în gestionarea lor și sensibilitate la efectele secundare ale medicamentelor.

Scopul studiului: Evaluarea gestionării durerii la pacienții cu demență moderată-severă și asocierea cu simptomele neuropsihice.

Material și metodă: Analiza retrospectivă a implicat revizuirea fișelor de observație ale pacienților cu demență din departamentul de îngrijire paliativă în perioada 01.01.2021-31.12.2022.

Rezultate: Au fost incluși în studiu 102 pacienți, cu vârste între 46 și 97 ani, cu internări de la 1 la 12 și durată de spitalizare de la 2 la 88 de zile. Scorurile MMSE au variat de la 5 la 18.

Dintre pacienți, 57 au avut dureri, 52,9% necesitând tratament analgezic, iar 3,9% fără terapie. Tratamentele non-farmacologice au fost recomandate pentru mai puțin de 10% dintre pacienți.

Corelația dintre cauza durerii și agitația psihomotorie a fost nesemnificativă ($p=0,188$).

Concluzii: Agitația psihomotorie în demență nu a fost corelată cu cauza durerii, dar gestionarea durerii s-a bazat pe comorbidități, criterii de evaluare și profilul clinic al pacientului.

Cuvinte cheie: Demență, boală neurodegenerativă, gestionare durere, agitație psihomotorie, îngrijire paliativă.

Background

The pathology of dementias has become increasingly well known in recent years due to an increase in the number of

people diagnosed, with many patients being diagnosed at a young age with various types of dementia. (1) The global prevalence of dementia is anticipated to rise from 55 million

cases in 2019 to 139 million cases in 2050 as a result of population expansion and rising life expectancy. Over the same time span, the number of cases in Europe is predicted to nearly double, from 14.1 to 25 million. (2)

Dementia is defined by abnormalities in various cognitive areas that are severe enough to interfere with everyday functioning, (3) and the pathology's multiple neuropathological mechanisms include both neurodegenerative and vascular disorders. (4)

Pain is a prevalent symptom in dementia patients, with a prevalence of 35.3-63.5%. Effective pain management is critical for achieving a higher quality of life. (5)

Pain can be caused by a variety of illnesses, including musculoskeletal disorders, gastrointestinal and heart disorders, genitourinary infections, and pressure ulcers. Furthermore, symptoms associated with comorbidities are more severe in those without dementia. (6) Although painful symptomatology is widespread in dementia patients, it is sometimes difficult to recognize and under-treated. Because cognitive impairment impairs people with dementia's ability to verbalize their discomfort, clinical assessment is based on what is observed. However, behavioral and neuropsychiatric dementia characteristics such as agitation, confusion, hostility, and hallucinations frequently hide pain signs such as screaming, wailing, sobbing, facial grimacing, restlessness, fidgeting, and antalgic posture. (7) On the other hand, symptoms attributed to dementia may actually be an indication of pain. For example, aggressive behaviors may be a defense mechanism on the part of patients who are unable to verbalize their pain. Such behavior could also be mistaken for a symptom of dementia. (8)

Because of their accuracy in assessing the existence and intensity of pain, pain self-assessments are regarded the gold standard. However, the utility of these self-evaluations varies by stage and is especially limited in patients with severe dementia due to decreased verbal communication. (9) As a result of this disease and the inability to properly express orally, behavioral observation-based pain assessment techniques are becoming the best alternative for pain assessment in people with this condition. (10)

Managing pain in patients with cognitive impairment presents challenges in diagnosing and assessing treatment effectiveness. Non-pharmacological approaches are recommended as the initial choice for adults with dementia. Non-opioid analgesics, like NSAIDs, are commonly used first, followed by opioids, alone or in combination with non-opioids, to optimize therapy and minimize side effects. (11)

Aim of the study

The aim of this research is to evaluate the nursing practice of pain management in people with moderate-severe dementia and to assess the association between pain-related diagnoses and neuropsychiatric symptoms using data from the observation sheets of patients who were admitted to the palliative care ward of the Institute of Psychiatry "Socola" Iasi.

Methods

We analyzed common clinical observation sheets using a retrospective methodology. We examined the observation sheets of dementia patients admitted between January 1, 2020 and December 31, 2022. People with dementia in Alzheimer's disease, vascular dementia, mixed dementia, and Parkinson's disease dementia admitted to the Institute of Psychiatry "Socola" Iasi, Section IX Chronic - Palliative Care Department

comprise the accessible population. The section is a medical facility with a capacity of 25 beds where patients with dementia who are unable to regulate their symptoms at home can be admitted.

The following patient data were collected: age, gender, background, educational level, marital status, length of stay (days), mortality, type of dementia, and stage of dementia. Assessments for the presence of pain (VAS scale and Abbey scale), presence of analgesic administration schedule (fixed, on-demand, or none) and type of analgesic prescribed, recommendation and application of non-pharmacological treatment, presence of neuropsychological symptoms associated with pain recorded in the evolutions and record keeping, therapies used for psychiatric symptoms and their influence on pain were considered for the collection of pain-related variables.

Results

The present study is a retrospective analysis of the general clinical observation sheets of patients who were admitted between 1.01.2021-31.12.2022 in the palliative care department of Socola Psychiatric Institute Iasi. We analyzed a total of 317 observation sheets of which 312 were with dementia diagnoses, and 5 observation sheets were excluded as they did not meet the inclusion criteria. As patients are repeatedly hospitalized, we analyzed a total of 102 unique patients.

The study group comprised 102 patients, aged between 46 and 97 years with a mean age of 78.28 ± 10.76 years. The number of admissions ranged from 1 to 12 and the mean was 3.05 ± 3.29 . The period of hospitalization ranged from 2 to 88 days, with a mean of 39.70 ± 22.20 days. The MMSE (Minimum Cognitive Status Evaluation) score ranged from 5 to 18 with a mean of 9.10 ± 2.90 . (Table 1)

Table 1 - Characteristics and description of the sociodemographic data of patients included in the study (N=102)

Characteristics	n	%
Mean age, in years (mean±SD)	78,29± 10,76	
Number of admissions (mean±SD)	3,05± 3,29	
Average number of hospital days (mean±SD)	39,70±22,20	
MMSE (mean±SD)	9,10± 2,90	
Gender		
Femele	56	54,9
Male	46	45,1
Environment		
Urban	65	63,7
Rural area	37	36,3
Level of education		
Primary school	30	29,4
Secondary school	32	31,4
High school	20	19,6
Vocational school	11	10,8
Bachelor	7	6,9
Out of school	2	2,0

<i>Marital status</i>		
<i>Married</i>	27	26,5
<i>Spouse deceased</i>	58	56,9
<i>Divorced</i>	8	7,8
<i>Unmarried</i>	9	8,8
<i>Death (yes)</i>	34	33,3
<i>Relationship between sociodemographic data and pain</i>		
	Pain	
	Yes N=57(%)	No N=45(%)
<i>Male gender</i>	24 (42,1)	22(48,9)
<i>Rural area</i>	23(40,4)	22(48,9)
		p-value
		0,494
		0,335

Age significantly impacts the development of dementia and pain perception. Aging can lead to cellular damage, protein plaque accumulation, and alterations in the central nervous system's functioning, contributing to dementia's deterioration. Gender differences in dementia prevalence can be attributed to men having higher levels of education compared to women, especially in socio-cultural contexts where women's access to education may be limited. These differences can influence pain perception and experience, with women being more prone to chronic pain and experiencing chronic pain-related conditions. The discrepancy in backgrounds can be attributed to the interplay between cognitive impairment and daily activities of

urban patients, which often involve cognitive tasks. This increases the likelihood of early detection of dementia symptoms, especially in rural areas where cultural considerations have less impact on seeking specialized care. Higher education is often associated with a lower incidence of dementia, as individuals with higher education tend to possess greater cognitive reserve and advanced problem-solving abilities, which can help maintain cognitive function and delay or decelerate dementia symptom onset.

Marriage or stable life partners are less susceptible to developing dementia compared to single, divorced, or widowed individuals. Healthy and supportive relationships can provide emotional and social support, reducing stress and mitigating social isolation, which can contribute to the development of dementia.

The sample of individuals chosen for this research investigation included 102 patients who were diagnosed with moderate to severe dementia using the ICD-10 classification criteria. Because of the growing prevalence across the country, the most prevalent types of neurocognitive disorders found in this study were mixed dementia (46 patients), Alzheimer's disease dementia (29 patients), and vascular dementia (17 patients). (Figure 1)

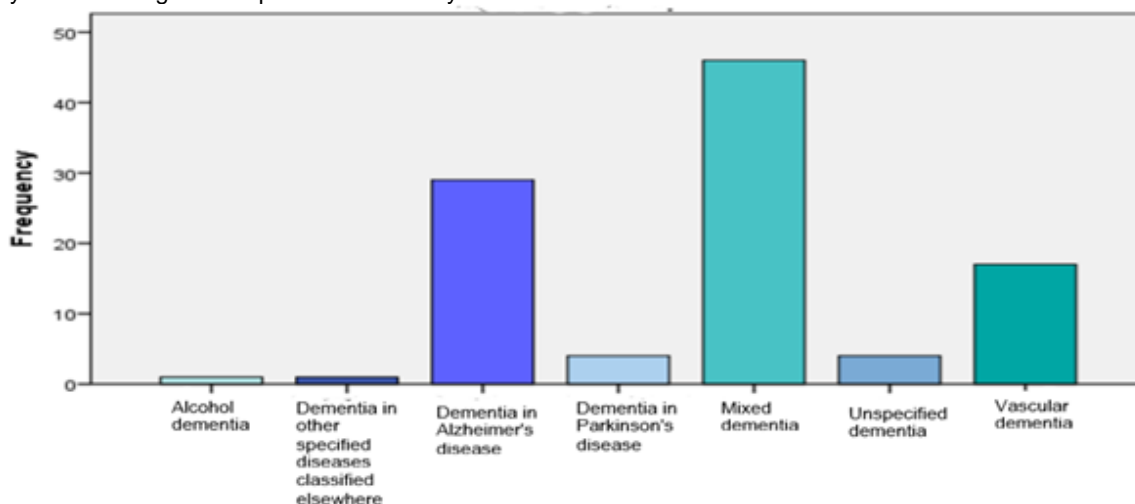


Figure 1 - Distribution of patients by type of dementia

In the study assessed 57 patients with pain complaints, representing 55.9% of the group. Of these, 45 (44.1%) did not present any painful components during admission. The patients had various somatic disorders, including cardiovascular, neurological, metabolic, gastrointestinal, and oncological diseases. Osteoarticular disease is the most common cause of pain. Patients with mental illnesses like sadness, sleeplessness, and anxiety, including dementia patients, often experience painful sensations. The findings suggest a possible relationship between mental state and pain perception in dementia patients.

According to the findings, 37.3% of patients had chronic pain, emphasizing the need of properly addressing and managing this issue.

Furthermore, 11.8% of patients had acute discomfort, indicating the presence of new or short-term instances within the group studied. In addition, a similar proportion of 7.8% had

both acute pain and a transient exacerbation of pain within an established chronic disease, indicating the complexity of pain concerns seen in the medical context.

In terms of pathophysiological mechanism, 35.3% of patients reported neuropathic pain, whereas 10.8% reported nociceptive pain. It was also discovered that 10.8% of patients had both neuropathic and nociceptive pain.

The visual analogue scale (VAS) and the Abbey scale for aphasic patients were used to assess pain. The visual analogue scale was employed in the majority of cases, with 37 patients (36.3%) being examined solely using this scale. Furthermore, 21 patients (20.6%) were evaluated using both the visual analogue scale and the Abbey scale. The Abbey scale of pain measurement in aphasic individuals revealed that 12.7% had mild pain, 7.8% had moderate pain, and the remaining 2% had severe pain.

Analgesics were classified according to analgesic scale for the purposes of pharmacological therapeutic analysis: non-opioids (paracetamol, nonsteroidal anti-inflammatory medications, metamizole), weak opioids (Tramadol), strong opioids

(Morphine). The maximum permissible daily doses for all analgesics have been established based on the official product characteristics.

Non-steroidal anti-inflammatory drugs (NSAIDs) were the most widely utilized. 39.2% (40 patients) of those evaluated were given non - steroidal anti-inflammatory drugs, 14.7% were given Metamizole, and only 5.9% were given Paracetamol as part of their approved treatment plan. Step I analgesics were administered as needed as monotherapy.

It was discovered that 10.8% of patients were recommended second-stage analgesic medicines according to the analgesic ladder. Weak opioids were used both frequently and as needed, according on the patients' unique needs. For pain relief, a therapeutic combination of medications such as paracetamol and tramadol were used in some circumstances. Strong opioids (morphine) were taken as monotherapy in two cases (2%) on a regular basis.

Table 2 - Clinical profile of patients, relationship between associated co-morbidities and pain and management of pain

Pain	n	%
Yes	57	55,9
No	45	44,1
Relationship between associated co-morbidities and pain		
	Pain	
	Yes N=57(%)	No N=45(%) p-value
Cardiovascular comorbidities	43(75,4)	34(75,6) 0,989
Neurological comorbidities	30(52,6)	26(57,8) 0,604
Metabolic comorbidities	8(14,00)	12(26,7) 0,111
Osteoarticular comorbidities	40(70,2)	13(28,9) 0,001
Respiratory comorbidities	14(24,6)	10(22,2) 0,782
Gastrointestinal comorbidities	14(24,6)	9(20,0) 0,584
Associated oncological disease	7(12,3)	4(8,9) 0,583
Psychiatric disorders	26(45,6)	19(42,2) 0,732
Pain management		
Pathophysiological mechanisms	n	%
Neuropathic pain	36	35,3
Nociceptive pain	11	10,8
Neuropathic + nociceptive pain	11	10,8
Temporal criteria		
Acute	12	11,8
Chronic	38	37,3
Both acute and chronic	8	7,8

Pain intensity scale used during stay		
Visual Analogue Scale (VAS)	37	36,3
VAS+ Abbey scale	21	20,6
Baseline pain intensity		
No Pain	44	43,1
Mild	19	18,6
Moderate	36	35,3
Intense	3	2,9
Measuring pain in aphasic patients (Abbey scale)		
	n=23	%
Mild	13	12,7
Moderate	8	7,8
Intense	2	2,0
Pharmacological interventions recorded		
Non-steroidal anti-inflammatory drugs (NSAID)	40	39,2
Metamizole	15	14,7
Paracetamol	6	5,9
Tramadol	11	10,8
Morphine	2	2,0

Given that non-pharmacological treatment was indicated for less than 10% of patients, kinetherapy, physiotherapy, massage, and TENS (Transcutaneous electrical nerve stimulation) were used. (Figure 2)

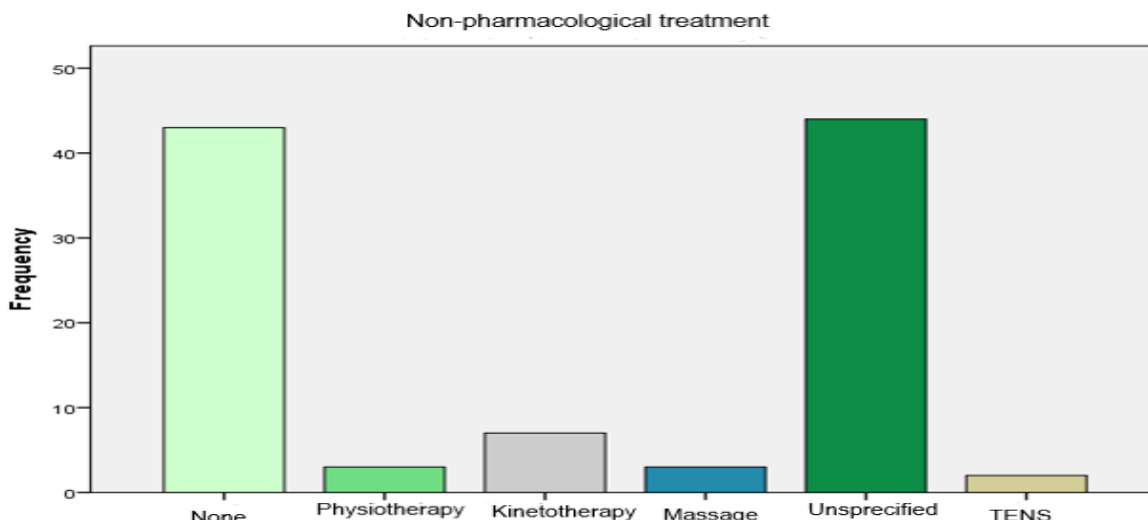


Figure 2 - Non-pharmacological treatment

Sedatives, including benzodiazepines, neuroleptics (both conventional and atypical), antidepressants, and thymostabilisers/anticonvulsants, were also investigated in connection to pain evaluation in the current study.

In the case of dementia patients, in addition to cognition deficiencies, they commonly present with mental symptoms such as anxiety and depression, which necessitate particular therapy with benzodiazepines, antidepressants, and thymostabilisers/anticonvulsants. Because they are administered on a daily basis, it is plausible that the presence of these molecules with co-analgesic qualities in the body influences pain perception and severity at the beginning of pain

symptoms, although the correlations are not clinically significant, according to Table 3. Thus, anxiolytic and antipsychotic medicines have no effect on pain severity, while individuals using anticonvulsant and antidepressant medications do not have mild or no pain sensations.

Table 3 - Statistical correlation between psychiatric medication and pain intensity assessed with the Visual Analogue Scale (VAS) and the Abbey Scale

	Pain intensity- VAS				p	
	Mild N=19	Moderate N=36	Severe N=3	No N=44		
<i>Antipsychotics drugs</i>	10(52,6)	12(33,3)	1(33,3)	13(29,3)	0,361	
<i>Benzodiazepines</i>	7(36,8)	13(36,1)	0(0,0)	13(29,5)	0,572	
<i>Antidepressants</i>	6(31,6)	8(22,2)	0(0,0)	10(22,7)	0,646	
<i>Anticonvulsants as "Mood Stabilizers"</i>	6(31,6)	19(52,8)	1(33,3)	18(40,9)	0,457	
	Pain intensity-Abbey scale				p	
	Mild N=13	Moderate N=8	Severe N=2	Not used N=35	No N=44	
<i>Antipsychotics drugs</i>	5(38,5)	2(25,0)	1(50,0)	15(42,9)	13(29,5)	0,712
<i>Benzodiazepines</i>	4(30,8)	2(25,0)	0(0,0)	14(40,0)	13(29,5)	0,688
<i>Antidepressants</i>	4(30,8)	1(12,5)	0(0,0)	9(25,7)	10(22,7)	0,801
<i>Anticonvulsants as "Mood Stabilizers"</i>	7(53,8)	5(62,5)	1(50,0)	13(37,1)	18(40,9)	0,650

Regarding the neuropsychiatric symptoms associated with dementia, in the present study, we took into account the data on psychomotor agitation, and after centralisation them, we observed that there was no statistically significant correlation

between the presence of psychomotor agitation and the presence of pain. (Table 4)

Table 4 - Statistical correlation between psychomotor agitation state and pain in patients with pain

	Pain		p-value	OR	IC95%
	Yes N=57(%)	No N=45(%)			
Psychomotor agitation	25(43,9)	14(31,1)	0,188	1,26	0,900-1,769

One challenge that is likely to occur in treating pain is polypharmacy. In the study group, it was observed that the subjects included in the study had an average of 8 recommended medications per day. Therapeutic interventions included both medications recommended during hospitalization and personal medication recommended for associated pathologies. Analgesic medication recommended as needed was excluded. (Figure 4)

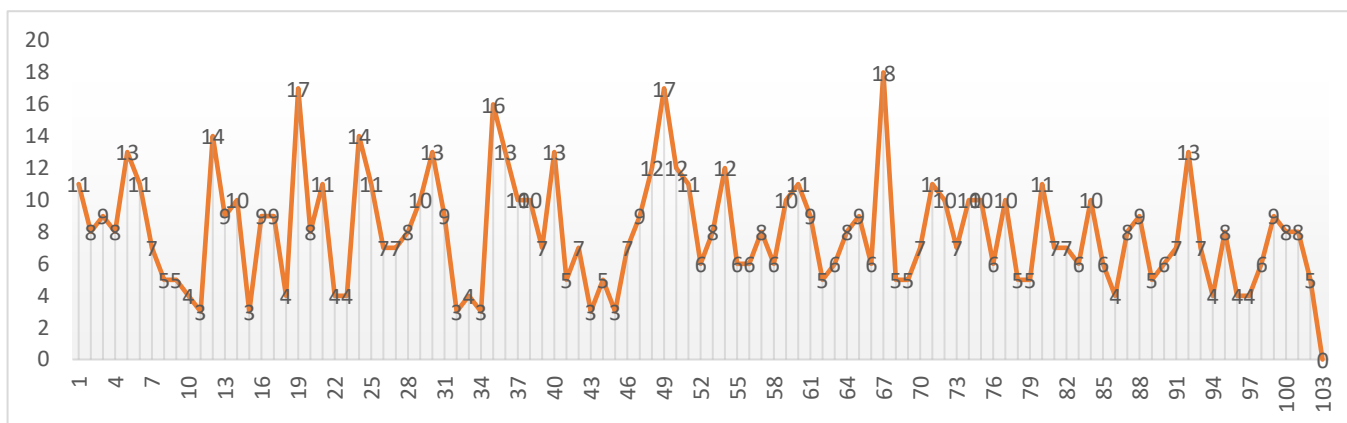


Figure 3 - Graphical representation of the number of drugs administered to each patient per day. Recommended psychiatric treatment during hospitalization and personal treatment for associated comorbidities were taken into account. Excluded recommended analgesic medication as needed (number of drugs).

Discussion

Pain symptomatology is influenced by socio-demographic characteristics, therefore patients with a poor educational level, from rural regions, or who are widowed/unmarried may suffer more intense pain than urban or married patients. These findings were similar to the retrospective cohort, where the majority of patients with dementia were 75–84 years of age, female, married, and had a low education level. (5)

Psychiatric symptoms such as depression, anxiety and insomnia also influence pain perception in patients with moderate-severe dementia. Because the relationship is bidirectional and both operate as risk factors for one other, the link between mood disorders and acute pain has become increasingly prominent. Depression and anxiety are linked to an increased sense of pain severity, whereas chronic pain leads to greater mood instability. (12)

More than 24 tools have been created for the assessment of pain in patients with severe dementia, and they have been modified and validated in different languages. (13)

In the management of pain in patients with moderate-severe dementia in the study group, the visual analogue scale and the Abbey aphasic scale were used to assess pain.

In pain therapy, a non-pharmacological approach is recommended as the first choice for pain management in people with dementia. (14)

Non-pharmacological pain treatment was not commonly described in this study.

Patients hospitalized with dementia often experience a range of pain-related conditions, including arthritis, musculoskeletal

diseases, cancer, osteoporosis, and various chronic illnesses. (15)

The typical approach to pharmacological treatment involves initiating therapy with non-opioid analgesics, such as non-steroidal anti-inflammatory drugs (NSAIDs). Subsequently, opioids may be introduced, either as standalone medication or in conjunction with non-opioids, to optimize treatment efficacy and minimize any potential adverse effects. (11)

For the treatment of neuropathic pain, gabapentin/pregabalin or serotonin-norepinephrine reuptake inhibitors may be used instead of tricyclic antidepressants because of their cardiovascular contraindications. (16)

Untreated pain, according to evidence from generous studies, can cause behavioral symptoms, and painkillers can be used to relieve symptoms. (17)

Additional factors to consider in patients with dementia include considerable changes in pharmacokinetics and pharmacodynamics, a greater likelihood of polypharmacy - increased drug-drug interactions - and comorbidities that contribute to drug-disease interactions (18)

Polypharmacy complicates the pharmacological treatment of pain in this population and may be a cause for certain symptoms or behavioral issues. It can also result in a vicious circle in which a patient with dementia suffering from pain becomes agitated and is prescribed an antipsychotic, which worsens the agitation and requires a higher dose, while the pain remains untreated. (19)

Conclusion

Painful symptoms are influenced by demographic variables. Represented psychiatric symptomology impacts pain perception in patients with moderate-severe dementia. Nonsteroidal anti-inflammatory medications (NSAIDs) were the most frequently prescribed analgesics. Non-pharmacological pain management was not frequently documented. In individuals with moderate-to-severe dementia, antidepressant, anticonvulsant, anxiolytic, and antipsychotic drugs included in the treatment program had no effect on their experience of pain. Psychomotor agitation in individuals with moderate-to-severe dementia during hospitalization could not be linked to pain complaints. More research on rating scales including components for both pain and psychomotor agitation is required. Polypharmacy is widespread among patients with dementia.

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