

RESEARCH NOTE

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Distinguishing Delirium from Dementia

Abstract

Distinguishing between delirium and dementia is essential for understanding the underlying mechanisms which direct a nurse to the best interventions. However, delirium and dementia are conditions that are at times difficult to differentiate even for experienced clinicians. While the similarities can make distinguishing between the two disorders challenging, there are distinct differences. Therefore, this article describes similarities and differences in the characteristics of each condition to assist clinicians in accurate detection and identification.

Keywords: *Acute Confusion, Delirium, Dementia, Geriatrics*

Introduction

Delirium and dementia are separate mental states that can be characterized by impaired memory and judgment, confusion, disorientation, decreased ability to communicate, impaired functioning, and variable degrees of paranoia and hallucinations (Neerland et al., 2017). Delirium is a involves "sudden cerebral deterioration" with alterations in mental functioning, primarily inattention, disturbance in awareness, and cognitive impairment. Delirium can be triggered by a number of events such as acute illness, injury, surgery, or drug intoxication (Mulkey, Roberson, Everhart, Hardin, 2018). In contrast, dementia is an acquired chronic impairment of executive function in one or more cognitive domains (e.g. memory, language, executive function, judgment, attention, perceptual motor function, and social skills) that typically develops slowly over time (Kolanowski, 2018). Vascular dementia may have a sudden onset but there are typical findings on radiographic imaging to support

this. While common, delirium and dementia are conditions that are, at times, difficult to differentiate even for experienced clinicians. However, while the similarities can make distinguishing between the two disorders challenging, there are distinct, critical differences that, once recognized, can assist the clinician in making an accurate diagnosis (Lippmann & Perugula 2016). This article provides clinicians a clear understanding of symptoms which differentiate the two.

Delirium

Delirium is common, causes significant distress and is associated with poor outcomes including increased risk of dementia, death, long-term care admission and length of hospital stay (Abou Saleh & Crome 2012). While the disorder can occur at any age, it is more common in older people (>64 years) (Mulkey et al., 2018). Older adults with three or more predisposing risk factors are at a 60% higher risk of developing delirium (Avelino-Silva, Campora, Curiati, & Jacob-Filho, 2017).

Dementia

Dementia results from an exogenous insult or an intrinsic process affecting cerebral neurochemistry and/or anatomic damage to the cortex, sub-cortex, or deeper structures (Lippmann & Perugula 2016). There are many risk factors believed to be associated with dementia such as aging, family history, genetic factors, vascular alterations chronic inflammation, obstructive sleep apnea, traumatic brain injury, pesticide exposure and low education (Viticchi et al., 2017; Elahi & Miller, 2017; Jutkowitz et al., 2017). While there are also many etiological factors associated with dementia, there is usually a progressive neuronal pathology likely beginning as much as twenty years before clinical diagnosis. Over time there is a progressive loss of synaptic terminals and accumulation of white matter pathology. Behavioral symptoms represent brain disconnectivity and quantifiable loss of cerebral "reserve." There is a strong correlation between neurodegenerative disease and cognitive decline. As a result of cognitive decline and changes in behavior, there is an impairment in performing activities of daily living and social abilities. Typically, the development of dementia occurs over a progressive period of time. Prior to cognitive impairment such as dementia is a significant independent risk factor for delirium (Gani et al., 2013). This loss of cerebral reserve increases the risk for delirium with the advent of physiological stress.

Sub-Syndromal Delirium (SSD)

Sub-syndromal delirium shares characteristic core domain symptoms with delirium, distinguishing each from non-delirium. Proposed SSD clinical criteria are as follows: (1) absence of full syndromal delirium, (2) acute or subacute onset, (3) disturbed attention, and (4) evidence of other cognitive and/or neuropsychiatric disturbances not better accounted for by another neuropsychiatric condition (Sepulveda et al., 2017). Severity is considered to be less severe with the sub-syndromal group. Milder disturbances of delirium's core domain symptoms are highly suggestive of SSD.

Although little research exists comparing symptom profiles, sub-syndromal Delirium (SSD) complicates the diagnosis of delirium and dementia (Sepulveda et al., 2017).

Dementia (DSD)

Coexistence between delirium and dementia is highly frequent. Compared with isolated dementia, having both delirium and dementia is associated with higher costs, more pronounced functional decline, and increased mortality. While approximately one-third of hospitalized patients develop delirium, the rate is dramatically higher at 89% in patients with pre-existing dementia (van Velthuisen, Zwakhalen, Mulder, Verhey, & Kempen, 2017). Delirium superimposed on dementia is also associated with more than double the mortality risk compared to delirium or dementia alone.

Detecting delirium in someone who already has dementia can be more challenging, even for neuropsychologists. Careful interview of caregivers and other available clinical history becomes crucial in differentiating between them. Despite the difficulty, it is critical for appropriate treatment and a faster recovery. Delirium's core symptoms often overshadow the dementia phenotype when comorbid. While not exclusive, several behaviors increase the likelihood of DSD (Kolanowski et al. 2016). These include increased agitation, unusually resistive to care, falls, catastrophic reactions, decreased communication, inattention, fluctuating alertness.

Comparison

Onset

The occurrence of delirium depends on an intricate relationship between predisposing (i.e., advanced age, preexisting dementia or cognitive impairment, functional dependence, and visual impairment) and precipitating factors (i.e., acute/critical illness, trauma, surgery) (Avelino-Silva et al. 2017). Delirium is an acute confusional state with a sudden onset associated with an acute change in condition (Mulkey et al., 2018). In delirium, baseline function may rapidly deteriorate to a confusional state with impaired ADLs. In contrast, dementia typically begins slowly and is gradually noticed over time. Therefore, getting a report of usual or baseline functioning is expected for an individual with dementia. Some key factors include a past medical history of dementia, concerns related to short-term memory, challenges with completing tasks and activities, and any physical or psychological impairments.

Underlying Mechanism

Delirium is usually triggered by a specific illness, such as a urinary tract infection, pneumonia, dehydration, illicit drug use, or withdrawal from drugs or alcohol (Mulkey et al., 2018). Medication interactions or abrupt withdrawal can also contribute. Conversely, the cause of dementia

is typically a disease such as Alzheimer's, vascular dementia, Lewy body dementia, frontotemporal dementia or a related disorder (Blanc & Verny 2017; Young, Lavakumar, Tampi, S., Balachandran, & Tampi, R. 2018).

Alzheimer's disease (AD) is a chronic neurodegenerative disease that slowly worsens over time. It is the cause of 60–70% of cases of dementia (Alafuzoff 2018). The most common early symptom is short-term memory loss. As the disease advances, symptoms can include problems with language, disorientation (including getting lost), mood swings, loss of motivation, not managing self-care and behavioral issues. As the disease progresses the individual often withdraws from family and society. Gradually, bodily functions are lost, ultimately leading to death.

Vascular dementia also known as multi-infarct dementia (MID), is dementia caused by problems in the supply of blood to the brain, typically preceded by years of hypertension and then a series of minor strokes, leading to worsening cognitive decline that occurs step by step (Alafuzoff 2018). It is a syndrome consisting of a complex interaction between cerebrovascular disease and risk factors that lead to changes in brain structures due to strokes and lesions, resulting changes in cognition. Another form of dementias Lewy bodies, the third most common type of progressive dementia after vascular dementia. In this condition, protein deposits, called Lewy bodies, develop in nerve cells in the brain regions involved in thinking, memory, and movement (motor control). A core feature is REM behavior sleep (RBD), in which individuals lose normal muscle paralysis during REM sleep, and often act out their dreams (Young et al., 2018). The fourth form of dementia is frontotemporal dementia (FTD). This is a group of related conditions that are the result of progressive degeneration of the temporal and frontal lobes of the brain. Due to the similarities, frontotemporal dementias (FTDs) and Alzheimer's disease (AD) are often misdiagnosed. As the condition's progressive degeneration evolves, there is a gradual decline in decision-making ability, behavioral control, emotions and language (Alafuzoff, 2016).

Duration of Conditions

Delirium is an acute condition that can last for a couple of days to even a couple of months. Delirium is almost always temporary if the cause is identified and treated. However, delirium can cause long-term cognitive impairment (Mulkey et al., 2018). Dementia, on the other hand, is generally a chronic, progressive, incurable disease. Some reversible causes with similar symptoms are vitamin B12 deficiency, normal pressure hydrocephalus, and thyroid dysfunction (Osimani, Berger, Friedman, Porat-Katz, & Abarbanel, 2005).

Communication Abilities

In delirium, memory functioning is usually less affected but the ability to focus and maintain attention to something or someone is very poor (Adamis et al., 2016). Delirium may significantly and uncharacteristically impair someone's ability to speak coherently or appropriately. In dementia, the

level of alertness is typically not affected until the later stages, whereas memory is significantly affected throughout the progression of the disease. Dementia leads to a gradual deterioration in the ability to express oneself as the disease progresses. People with dementia may have difficulty finding the right words (Richardson et al., 2017).

Attention Span and Memory

Posner (1967) examined aspects of the role of memory in information processing. As a result of his work, it was determined that information processing is separate from short-term memory and tests of sustained attention are able to discriminate delirium from dementia. With delirium, there are impairments in the attention and level of consciousness cognitive domains. These domains are usually not impacted with dementia unless there is also concurrent or developing delirium, further supporting the differences that discriminate delirium from dementia and other neuropsychiatric syndromes.

Activity/Mobility Level

People with delirium are often either overly active (hyper and restless) or under-active (lethargic and less responsive) compared to usual functioning (Volland, Fisher, & Drexler 2015). Hyperactive delirium, manifests itself as increased psychomotor activity, hyper-alertness, agitation, irritability, restlessness, combativeness, distractibility, delusions, and hallucinations. Conversely, the hypoactive subtype, frequently called “quiet delirium” manifests itself as decreased psychomotor activity, lethargy, inattention, slow responses to questions, and looks similar to depression and sedation (Bush et al., 2017; Bui et al., 2017). Dementia typically does not affect a person's activity level until the later stages. The prevalence rate of physical aggression in patients with dementia is approximately 18% and has been associated with dyspraxia, difficulty completing motor tasks. Poorer baseline functional status has been associated with physical aggression, and poorer functional status increases the transition probability of physical aggression (Kolanowski et al., 2017).

Approaches to Treatment

Delirium requires immediate treatment. Since it is usually caused by an illness, infection or trauma, when the underlying condition resolves, the symptoms of delirium will improve. There are currently a handful of medications approved by the FDA for Alzheimer's disease, the most common type of dementia (Addesi et al., 2018).

These medications include anticholinesterase inhibitors (i.e. Donepezil, Rivastigmine, and Galantamine) and disease-modifiers (i.e. memantine). While these medications do not cure dementia, it is believed they may slow the progression of symptoms, including memory loss, poor judgment, and behavioral changes (Naharci, 2018). However, some evidence has suggested these medications may not work, and in some cases of FTD, may make the dementia worse.

Consequences of Misdiagnosis

Patients who develop delirium are more likely to suffer from hospital-associated complications ($p < 0.001$), have higher in hospital ($p = 0.002$) and 30-day mortality rates ($p = 0.008$), to need repeat interventions, and longer length of hospital stay ($p = 0.007$) increased need for acute rehabilitation, skilled nursing and long-term acute care after discharge compared to those who did not develop delirium (Radinovic et al., 2015; Tarazona-Santabalbina et al., 2015). Because of delays in identification, most older adults will still have delirium at the point of hospital discharge, posing an ongoing challenge regarding the need for facility-based post-acute care (Mulkey, Roberson, Everhart, & Hardin, 2018). When patients with prior cognitive impairment develop delirium there is an increase in mobility impairments, highlighting the importance of delirium preventions and cognitive therapies. These interventions are thought to improve the functional recovery and reduce one-year post-discharge mortality.

There is a negative correlation between length of delirium and scores on Katz Index of Independence in Activities of Daily Living, a measure of a patient's functional ability when attempting to complete activities such as bathing, eating, dressing, and home maintenance (Szejf et al. 2012). This has translated to an increased need for long-term care after hospital discharge. Gruber-Baldini et al. (2017) conducted a prospective cohort study of 682 older patients with no preexisting cognitive impairment at the time of admission who subsequently developed delirium to evaluate the incidence of persistent or sustained cognitive impairment based on a Mini Mental Status Exam (MMSE) and a decline in ability to perform activities of daily living (ADL) two years after hospital discharge. They found the presence of delirium resulted in fewer patients who were able to complete ADLs and walk 10 feet, and a higher incidence of depression and cognitive impairment two years after survey. Edelstein et al. (2004) also found community-dwelling patients who developed delirium had an increased one-year mortality rate, functional decline, and decline in independence after hospitalization.

There is a positive correlation between mortality rate and length of delirium episode. Researchers supports as much as an 11% increase in mortality for each 48 hours of active delirium and as many as 14% of patients will die within a month and 22% at six months (Avelino-Silva et al., 2018; Adamis et al., 2017). These rates are twice the rate of comparable medical patients who do not develop delirium (Avelino-Silva et al., 2018; Adamis et al., 2017).

Recommendations for Improving Recognition

Delirium screening tools identify the presence or absence of delirium, with some providing information regarding severity. All screening tools are not equal. Limitations include a lack of continuous monitoring, being retrospective, validated in a limited patient population or environment and subjectivity. Caution should be exercised when selecting a tool for delirium assessment especially with patients who have dementia or other chronic neurological impairment. Some of the

tools do not differentiate delirium from dementia, which is important for the older adult. For example, several studies have determined the accuracy of the CAM-ICU was lower in patients with mild delirium (30%), baseline mild cognitive impairment (33%), and dementia (62%) as opposed to patients without cognitive impairments (van Velthuisen et al., 2016). The following tools help differentiate delirium from dementia: Cognitive Performance Scale (CPS2), International Resident Assessment Instrument-Acute Care (Inter RAI-AC), DRS-R98-K. Although not specifically for delirium, the CPS2 appears to be a reliable screening tool comparable to the Mini-Mental Status Exam (MMSE) for assessing cognitive impairment in acutely ill older hospitalized patients (Travers, Byrne, Pachana, Klein, & Gray, 2013). The RAI AC is also validated for assessing delirium and dementia in acutely ill older adults (Travers et al., 2013). The RAI AC offers the advantage of being able to accurately screen for both dementia and delirium without the need to use additional assessments, thus increasing assessment efficiency.

Nurses need accurate information and assessment tools that are efficient. When determining the most appropriate assessment tool, several other considerations should include time to complete the tool, instrument validation in the population to be screened (i.e. sensitivity and specificity), tool performance in the clinical environment, and limitations of the instrument, such as differentiating dementia or traumatic brain injury from delirium (De & Wand 2015). Additionally, it should also be noted that many of the screening tools (i.e. CAM-ICU) require initial and ongoing user training to maintain reliability in screening accuracy (Malik, Harlan, & Cobb 2016).

Table 1. Stressors and Interventions

| Stressor | Intervention |
|--------------------------------------|---|
| Unmet needs | Promote rest and sleep at night Address fear, hunger and toileting needs |
| Acute Medical Condition | Consider possibility of pain, urinary tract infection or medication interaction/side effects |
| Sensory Deficits | Encourage use of visual and hearing aids Provide simple activity such as folding washcloths, busy vests/drapes with buttons and zippers, etc. |
| Caregiver stress, depression, burden | Encourage rest and night time sleep away from the hospital, caring for one's personal needs, stress reduction techniques, time for self |
| Education | Educate significant others, visitors and staff that behavior is not intentional but a result of cognitive impairment |
| Communication | Keep it simple-do not over explain or discuss what will happen in the future Use a calm voice Avoid open ended questions Limit the number of options or choices Don't argue or disagree, simply change the subject or focus of conversation |

| | |
|------------------------------------|--|
| Over/under stimulating environment | Limit the number of people Reduce noise by turning off the TV and adjusting alarms Remove unused or unneeded equipment, Bring patient in chair to nurse's station or hallway for visibility |
| Safety | Remove sharp or potentially harming objects, use bed and chair exit alarms, limit restraint use, cover IVs and lines, use a nightlight, implement falls precautions |
| Lack of Activity | Provide appropriate available activities, encourage ambulation if permitted, relax rules as able unless safety is a concern |
| Lack of structure or routine | Maintain a routine or schedule such as bathing before or after breakfast, meals ambulation, and bedtime, Limit number or room/unit changes, allow time and do not rush activities |

Managing and Preventing Agitation

There are multiple potential reasons why patients with cognitive impairments, including delirium and dementia, exhibit agitation. Research has suggested patients' agitation may be the result from lack of understanding or unmet needs with difficulty expressing their needs (Livingston et al., 2014). Stress may be caused by changes in routine, too many competing or misleading stimuli, lack of stimuli, physical and social environmental changes, and demands that exceed functional ability. Clinicians should stop considering agitation as an entity but instead as a symptom of lack of understanding or unmet needs that the person with cognitive impairment is unable to explain or understand. In line with the need-driven, dementia-compromised behavior theory of Algase et al., this may be physical discomfort or need for stimulation, emotional comfort or communication. A qualitative synthesis of 63 research studies on the effects of environmental interventions provided evidence for its role in preventing and reducing behavioral symptoms, such as agitation (Pink, O'Brien, Robinson, Longson, 2018). Although 90% of the studies reviewed showed positive effects, most studies did not use randomized trials. These include tackling factors in the person's environment including (See Table 1):

- Being overstimulated (i.e. excess noise, people, or presence of unfamiliar items) or under stimulated (i.e. lack of anything of interest to look at)
- Safety problems (i.e. falls risk)
- Lack of activity and structure (i.e. getting out of bed, ambulating and activities that match interests and capabilities)
- Lack of established routines (i.e. frequent changes in the time, location, or sequence of daily activities).

Summary and Implications

Differentiating between delirium and dementia can be a challenge for all providers. Accurate identification is a product of knowing both the risk factors and events that can precipitate an episode. Close monitoring for a decline in cognitive function is important for the patient's overall quality of life, reducing unnecessary hospital length of stay, and preventing potentially avoidable health care costs. Patients with dementia are at higher risk of delirium.

Despite challenges, the proactive diagnosis of dementia and delirium will likely improve patient outcomes. Nurses need to remain diligent in their nursing assessment, maintaining the rigor of the nursing process when conducting cognitive assessments. It is equally important to identify the behaviors as delirious symptoms while using behavioral examples in documentation. While delirium and dementia present differently, patient-centered care involves family education to support active involvement in the patient's hospital and post-discharge care. Because cognitive impairment is common in the acute care setting and substantially impacts long-term outcomes, there is a pressing need for interdisciplinary care to alter a trajectory of decline and more research to improve diagnostics and management, regardless of the diagnosis.

Key Points

- Distinguishing between delirium and dementia is important for understanding the underlying mechanisms which direct a nurse to the best interventions.
- There are distinct differences that, once recognized, can assist the clinician in making an accurate diagnosis.
- Nurses need to remain diligent when conducting cognitive assessments.
- It is important to identify the behaviors as delirious symptoms while using behavioral examples in documentation.

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