JAMDA xxx (2016) 1–7

JAMDA

journal homepage: www.jamda.com

Review Article

The Diagnosis of Delirium Superimposed on Dementia: An Emerging Challenge

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A B S T R A C T

Delirium occurring in patients with dementia is referred to as delirium superimposed on dementia (DSD). People who are older with dementia and who are institutionalized are at increased risk of developing delirium when hospitalized. In addition, their prior cognitive impairment makes detecting their delirium a challenge. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition and the International

Keywords:
Delirium
dementia
diagnosis

The authors declare no conflicts of interest.

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http://dx.doi.org/10.1016/j.jamda.2016.07.014

delirium superimposed on dementia
Alzheimer disease
Lewy Body dementia

Statistical Classification of Diseases and Related Health Problems, 10th Revision are considered the standard reference for the diagnosis of delirium and include criteria of impairments in cognitive processes such as attention, additional cognitive disturbances, or altered level of arousal. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition and the International Statistical Classification of Diseases and Related Health Problems, 10th Revision does not provide guidance regarding specific tests for assessment of the cognitive process impaired in delirium. Importantly, the assessment or inclusion of preexisting cognitive impairment is also not addressed by these standards. The challenge of DSD gets more complex as types of dementia, particularly dementia with Lewy bodies, which has features of both delirium and dementia, are considered. The objective of this article is to critically review key elements for the diagnosis of DSD, including the challenge of neuropsychological assessment in patients with dementia and the influence of particular tests used to diagnose DSD. To address the challenges of DSD diagnosis, we present a framework for guiding the focus of future research efforts to develop a reliable reference standard to diagnose DSD. A key feature of a reliable reference standard will improve the ability to clinically diagnose DSD in facility-based patients and research studies.

Delirium is an acute neuropsychiatric disorder characterized by a disturbance in attention and awareness, which develops over a short period of time, with additional disturbance in cognition that are not explained by a preexisting cognitive impairment. Delirium that occurs in patients with dementia is referred to as delirium superimposed on dementia (DSD).[1] People who are older with dementia and who are institutionalized are at increased risk of developing delirium when hospitalized. In addition, their prior cognitive impairment makes detecting their delirium a challenge. The prevalence of DSD in institutionalized patients ranges from 1.4% to 70% according to the diagnostic tools,[2] whereas the prevalence in community and hospital populations ranges from 22% to 89%.[1] It is associated with higher health care costs, worse functional outcomes, and higher mortality rates compared with patients with dementia alone.[1,3–6] It was estimated that 35.6 million people lived with dementia worldwide in 2010, with the prevalence expected to nearly double every 20 years, to 65 million in 2030 and 115 million in 2050.[7] Therefore, DSD by inference will affect millions of people worldwide especially in nursing home facilities.

The diagnosis of delirium currently relies on the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) and the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) (Table 1).[8,9] These 2 standard references are similar in the definition of delirium, but it should be noted that no specific criteria are provided to clinicians or researchers in either system to assist with the diagnosis of DSD. The DSM-5 specifies that the cognitive deficits should not be better explained by a preexisting, established, or evolving neurocognitive disorder. In the ICD-10, preexisting cognitive deficits are not considered.

Thirty years ago Lipowski[10] provided a reference work for the definition of the concept of delirium. During the following years several terms have been used to define delirium. There has been an attempt to reduce the heterogeneity of delirium terminology to avoid "confusion" in clinical work and especially in research studies. The challenge to achieve clarity is even greater when delirium is considered in patients with preexisting dementia. In this context several terms have been used: sundowning, acute dementia, rapidly progressive dementia, acute confusion, delirium in cognitively impaired patients, and DSD.[11]

Although dementia may have more consistent terminology, the breadth of cognitive impairments in dementia nonetheless makes the assessment of baseline (and incident changes) in cognitive function challenging. Although some advocates prefer standardized testing, the progressive nature of dementia limits the battery of tests available. In addition, the growing diversity of the world population and the increasing challenge of dementia worldwide necessitate the availability of assessments in languages other than English.

The lack of standardization in the assessment of DSD may have potential significant clinical and research implications. The DSM-5 and the ICD-10 do not provide clinicians with indications of specific tests for assessment of attention or additional cognitive disturbances in cognition or altered level of arousal. Importantly, the assessment or inclusion of preexisting cognitive impairment is also not addressed by either the DSM-5 or ICD-10. Meagher et al[12] have recently attempted to provide a standardized approach to the use of the DSM-5 criteria for delirium to avoid "confusion" even with the use of the standard reference.[12]

As the DSM-5 and the ICD-10 are considered the standard reference for the diagnosis of delirium, then several practical limitations should be considered.

First, attention has multiple domains,[13] and there is not a clear DSM-5 and ICD-10 guidance regarding which domain or attention test should be used in patients with dementia, dementia stage, or dementia subtypes.

Second, the clinician is currently not provided with clear and predetermined methodology for how to ascertain the time of onset of delirium, the change from baseline, and fluctuation over the course of the day.

Third, there is no reference for how to determine the presence of a preexisting neurocognitive disorder or the level of arousal.

As a result, we formed a task force of European Delirium Association (www.europeandeliriumassociation.com), American Delirium Association (www.americandeliriumsociety.org), and Australasian Delirium Association (www.delirium.org.au) society members, collectively called iDelirium (www.idelirium.org), to (1) clarify the key elements for the diagnosis of DSD, (2) review evidence of DSD diagnosis, and (3) formulate a path for the future direction of research in DSD.

The Challenge of Neuropsychological Assessment of Delirium in Patient With Dementia

Attention Deficits

Inattention is considered a core feature of delirium (criterion A, DSM-5) and a valid assessment of attention is, therefore, central to the diagnosis.

Definition of attention

Attention is widely studied in neuropsychology, but there is not a single definition. A possible definition proposed by Cohen is the "ability to focus on a selected stimulus, sustaining that focus and shifting it at will."[14] Three major functions of attention are (1) orienting to sensory events, (2) detecting signals for focal processing, and (3) maintaining a vigilant or alert state.[13,15] These are reflected to some extent in the DSM-5 criteria for delirium, which