Journal of Psychosomatic Research 65 (2008) 255–259

Delirium detection in clinical practice and research: Critique of current tools and suggestions for future development

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Received 6 February 2008; received in revised form 1 May 2008; accepted 15 May 2008

Abstract

Delirium is underrecognized clinically. Many tools have been developed to assist with the diagnosis of delirium, and they vary greatly in purpose, quality, and administration time. It is suggested that future development of delirium assessment instruments be guided by a dichotomization of raters into expert and nonexpert groups. Careful consideration of the needs of the two groups suggests that assessment instruments designed for nonexperts should be entirely objective, whereas those instruments developed for experts should include the full range of constructs associated with the syndrome. This conceptualization is explored in detail, and existing assessment instruments are considered briefly in light of this position.

Keywords: Delirium; Diagnostic techniques and procedures; Review

Introduction

Delirium is a common, serious, and potentially preventable source of morbidity and mortality for medically ill or aging patients [1]. Despite the importance of delirium, healthcare professionals often fail to recognize its presence or to treat it appropriately [2]. This paradox suggests that delirium is a challenging diagnostic concept, perhaps attributable to the multidimensional and variable nature of the construct and the evolution of standard diagnostic systems for delirium. That delirium is hard to define and therefore recognize has led to the use of delirium assessment tools; indeed, there has been proliferation of such instruments, most of which have not undergone rigorous tests of reliability and validity. Moreover, assessment tools vary widely according to purpose, content, and rating time; to date, several reviews, with the aim of bringing some order to the area, have been carried out [3–6]. It has been a disappointing finding of these reviews that most instruments are not further developed or tested after the publication of the original validation study, but some notable exceptions to this general trend have contributed significantly to our understanding of the science of diagnosis. It is timely, therefore, to consider how to extend these contributions and to provide suggestions that could lead to future development of delirium assessment tools. The intentions of this review are to offer a position that may perhaps foster the development of assessment instruments and to consider available assessment instruments from this perspective.

Suggested parameters for future development of delirium assessment tools

In his seminal text on delirium, Lipowski [7] commented, "In the last 40 years, research on delirium has been relatively uninspired and has produced no breakthroughs" (p. 33). Yet the development of diagnostic instruments in the years leading up to and following the publication of Lipowski's

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doi:10.1016/j.jpsychores.2008.05.024

text has arguably positioned the field for breakthroughs. For example, underrecognition of delirium in clinical settings is a considerable problem. The Confusion Assessment Method (CAM) [8] is a quick, portable, and relatively accessible diagnostic algorithm that appears to be a solution for the diagnosis of delirium by nonexperts and thus a breakthrough in the care of patients with delirium. Despite representing a significant step in the science of delirium diagnosis, the publication of the CAM has not solved the problem of underrecognition [2]. The initial validation study of the CAM showed that the tool demonstrated good psychometric properties, but subsequent research has found the CAM to be an inadequate measure when used by nurses [9] and untrained physicians [10]. Although the CAM may appear to be transparent enough to permit use by medical professionals without formal CAM training, research in the area suggests that the available CAM training program [11] is vital to accurate judgment of relevant diagnostic domains. To realize the breakthrough of regular and accurate clinical diagnoses, the development of diagnostic tools for delirium should be driven by an appreciation of the skills of the mostly nonexpert medical professionals caring for patients with delirium in diverse clinical settings.

A single assessment tool is unlikely to suffice for all circumstances, however. This point is quite obvious when considering what is necessary to achieve breakthroughs in the understanding of neuropathophysiology and in pharmacotherapeutic intervention in both single cases and prospective clinical trials. Advances like these will depend on an assessment methodology that allows delirium experts to capture the breadth of behaviors associated with delirium, in order to discern the relationships between specific behaviors and biomarkers or neuroanatomical regions of interest, or to gauge the effects of targeted pharmacotherapeutic intervention. Moreover, it is desirable that this methodology be standardized to generate reliable and comparable data from different studies. As a first step towards the future development and refinement of delirium assessment instruments, tools could simply be considered as those designed to be used by nonexperts or experts. This pragmatic classification is a simple but important step, as nonexperts and experts differ significantly in their reasons for using tools and in their abilities to successfully use them. Exploring the needs and skills of these two groups in more detail provides a guide for the development of delirium assessment tools.

Experts are professionals with training in psychiatry, geriatrics, or other specialties that is sufficient to provide the clinical acumen needed to consider esoteric symptoms and to find meaning as observers, necessarily revealing complexity in both clinical and research efforts to foster better understanding and treatment of the condition. Therefore, tools that are designed for use by experts should include the full set of symptoms existing within the conceptual boundaries of delirium and should emphasize those symptoms that distinguish delirium from other neuropsychiatric disorders. Studies have shown that too inclusive or restrictive criteria can cause marked differences in reported prevalence rates of delirium [12,13], and so items included in the tool should be carefully balanced in order to maximize concordance between *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) and *International Classification of Diseases* (*ICD*) criteria. Even experienced clinicians have shown varied interpretations of *DSM*/*ICD* criteria when studied [9,14], and so the core features in tools designed for use by experts should also be accompanied by objective tests, whenever possible. When this is not possible, discernible anchors should be used for subjective ratings. The tool should incorporate information from a variety of sources, including laboratory results. An instrument with these characteristics would be useful for clinical and research purposes and would facilitate expert-level work: discovering potential relationships between symptoms or symptom clusters, monitoring the spectrum of symptoms for unexpected positive or negative treatment effects, and reporting systematically to allow the emergence of conceptual and applied themes in the care of patients with delirium.

In contrast, nonexperts primarily use delirium assessment tools to assist them in making a rapid and accurate diagnosis of delirium. Tools should therefore be focused on meeting this objective and should be limited to those essential symptoms or diagnostic domains that can be rated objectively (psychometric cognitive tests), be succinct and portable, and be reliably rated by users with no formal training. Limiting the scope of assessment for nonexperts to objective assessment avoids the variability inherent to subjective judgments of complex, abstract, and transient symptoms and diagnostic criteria made by nonexperts. Furthermore, limiting an assessment instrument for nonexperts to objective items may engender confidence in raters who doubt their ability to identify and treat delirium [15]. Moreover, the core features that the instrument uses to define delirium should be readily detectable and should occur with consistency. Overreliance on less common or abstruse symptoms will make the tool less easy to use and will reduce sensitivity. In fact, even expert raters have been shown to have difficulty using common screening instruments without training [10]. Many of the core features of delirium (disturbances of attention, memory, language, and orientation) can be measured objectively and used together to validly diagnose delirium, such as with the Cognitive Test for Delirium (CTD) [16]. Assessment of this type allows gradation and eschews unwieldy and equivocal evaluation and screening instruments that attempt to simplify difficult concepts for the nonexpert. The core features should also serve to differentiate delirium from other neuropsychiatric disorders (e.g., dementia) in order to maximize specificity. Finally, validation studies should use nonexperts as raters in order to mimic the real-life clinical setting, as use of experts may introduce bias.

The dichotomization of professionals into two groups to drive the conceptualization of delirium assessment tools may provide the framework for breakthroughs in research and