Brief Methodological Report

First Spanish Version of the Memorial Delirium Assessment Scale: Psychometric Properties, Responsiveness, and Factor Loadings

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Abstract

Context. The Memorial Delirium Assessment Scale (MDAS) is a reliable and validated instrument with which to assess delirium. However, MDAS responsiveness has only been investigated in an indirect way. Also, neurobehavioral and global cognitive factors seem to be the MDAS main factor loads.

Objectives. The primary objective of this study was to evaluate MDAS responsiveness and analyze individual factors on this scale. The secondary objective was to confirm concurrent validity and reliability of the Spanish version of the MDAS.

Methods. The translation-back translation method was used to obtain the Spanish version of the MDAS. Delirium diagnosis was determined by the clinical *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision criteria and with the Confusion Assessment Method. Responsiveness and factor loadings were determined with the Delirium Rating Scale-Revised-98, the Mini-Mental State Examination (MMSE), and the MDAS at baseline (0 hours) and at 72 hours.

Results. Variation in the scores of the Delirium Rating Scale-Revised-98 shows a correlation of $r = 0.93$, with variation in MDAS scores at $P < 0.001$. Variation in MMSE scores shows a correlation of $r = -0.84$, with variation in MDAS scores at $P = 0.015$. Factor I, neurobehavioral (reduced awareness, reduced attention, perceptual disturbance, delusions, altered psychomotor activity, and sleep-wake cycle disturbance), correlated moderately with the MMSE at −0.56. Factor II, global cognitive (disorientation, short-term memory impairment, impaired digit

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span, and disorganized thinking), correlated strongly with the MMSE at −0.81. Factor II was significantly more reliable than Factor I, rho = 0.7, $P = 0.01$.

Conclusion. The high responsiveness confirms the value of the MDAS for ongoing delirium assessment. Two differentiated factor loadings point to a potential future need for MDAS subscales. J Pain Symptom Manage 2014;47:189−197.

Key Words
Delirium, assessment, monitoring, questionnaires, cancer

Introduction

Among patients with cancer, 50% will develop delirium; delirium incidence increases to 66% in patients with advanced cancer and to 80% in cancer patients at the end of life.[1−4] Delirium is a harbinger of serious illness and has been identified as a predictor of in-hospital mortality.[5] Delirium greatly contributes to patient and caregiver suffering[6] and is one of the first symptoms that may lead to palliative sedation.[7]

An effective delirium assessment allows for early diagnosis and better treatment.[1] Wong et al.[8] demonstrated that the diagnostic capacity of the Memorial Delirium Assessment Scale (MDAS) showed a likelihood ratio higher than 6 vs. an assessment by a health professional. The MDAS was developed by Breitbart et al.[9] in 1997 in accordance with the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (*DSM-IV-TR*) criteria. This scale has demonstrated good reliability, concurrent validity, and clinical application and has retained its psychometric characteristics in different languages.[9−12] However, MDAS responsiveness (the instrument's ability to detect patient changes) has been addressed in an indirect way, and factor analysis has only been investigated once, without strong consistency.

The reporting of MDAS responsiveness is necessary to confirm this tool's ability to assess delirium severity variations over time. MDAS factor loadings were defined by Lawlor et al.[10] as two primary correlated factors: neurobehavioral and global cognitive. They used loadings of 0.35 or higher for interpretation purposes and four MDAS items (impaired digit span, reduced awareness, altered psychomotor activity, and sleep-wake cycle disturbance) loaded onto both factors. We hypothesized that the MDAS demonstrates good responsiveness with its global cognitive and neurobehavioral loading factors. Thus, the main objective of this study was to evaluate MDAS responsiveness and analyze individual factors on the questionnaire. The secondary objective was to confirm concurrent validity and reliability of the Spanish version of the MDAS.

Methods

Between June 2011 and May 2012, 85 cancer patients with delirium residing in three palliative care units in Spain were evaluated: 37 patients at Hospital Centro de Cuidados Laguna Hospice, Madrid; 28 patients at Clínica Universitaria, Universidad de Navarra, Pamplona; and 20 patients at Hospital Universitario La Paz, Madrid. Delirium was diagnosed by a palliative care specialist according to *DSM-IV-TR* criteria and Confusion Assessment Method (CAM) findings. The institutional review boards at all three centers approved the study, and participants provided written informed consent. When that was not possible, the patient's caregiver provided consent.

We used translation and back translation methods to obtain a Spanish version of the MDAS, which was reviewed by experts.[13,14] Three palliative care professionals assessed three translations done by bilingual translators. Each translation was reviewed by a group of experts that evaluated clarity and common language on a 0-to-10 scale for each MDAS item. A definitive MDAS translation was developed using the three translations. The translation obtained was back translated to English, and the final version was sent to Dr. Breitbart; any comprehension difficulties were resolved,