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DELIRIUM+ as a mnemonic device to optimize delirium-related teaching and clinical care

Proposição do mnemônico DELIRIUM+ para otimização do ensino e assistência clínica relacionadas ao delirium

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Abstract

Delirium, a common neurocognitive disorder among hospitalized older adults, depends on an interrelationship between precipitating and predisposing factors. Adequate prevention, detection, and management are directly related to knowledge of these factors. Due to a lack of education, delirium is underdiagnosed and the time taken to identify and react to the condition is suboptimal. Based on an open review of the literature, the main precipitating factors were compiled into the acronym DELIRIUM, in Portuguese. A second acronym MAIS (meaning 'plus') was compiled from important behaviors for preventing and treating delirium. Thus, the mnemonic device DELIRUM+ stands for: Discomfort, Electrolytes/metabolism, Locale/environment, Infections, urinary/fecal Retention; and acute clinical complications; Uremia; Medications + (Mobility, Assistant/companion, Interactions, and Sleep/psychotropic substances). This mnemonic device can encourage teaching and care aimed at the prevention, detection, and management of delirium. Ideally, the clinical impact of this mnemonic device should be tested in research to validate its implementation.

Keywords: delirium; older adult; risk factor; prevention; treatment.

Resumo

Delirium é um distúrbio neurocognitivo frequente entre idosos hospitalizados e depende da interrelação entre fatores precipitantes e predisponentes. Sua adequada prevenção, detecção e seu manejo estão diretamente relacionados ao conhecimento desses fatores. Devido à baixa disseminação de ensino nessa área, o delirium é subdiagnosticado e o tempo de identificação e instituição de condutas é subótimo. A partir de revisão aberta da literatura, os principais fatores precipitantes foram listados e compilados em categorias nominadas, em português, com as letras que compõem a palavra DELIRIUM. O símbolo de mais (+) foi acrescido para destacar condutas que deveriam ser mais bem observadas para a prevenção e o manejo do delirium, utilizando-se as letras que compõem a palavra MAIS. Resultados: Apresenta-se proposição do mnemônico DELIRUM+: D or; E letrólitos/Metabólico; L ocal/ambiente; I nfecções/ invasões; R etenção urinária/fecal; I ntercorrência clínica aguda; U remia; M edicamentos; + [M obilidade; A companhante; I nteração; S ono]. A proposição desse mnemônico tem potencial para favorecer o ensino e a assistência voltados à prevenção, à detecção e ao manejo do delirium. Idealmente, o real impacto clínico desse mnemônico deverá ser testado em delineamento de pesquisa para validar sua implementação.

Palavras-chave: delirium; idoso; fator de risco; prevenção; tratamento.

INTRODUCTION

Delirium is a neurocognitive disorder with acute onset and a fluctuating clinical course. It typically involves changes in attention, but is commonly associated with deficits in other cognitive domains.¹ Despite its high prevalence among hospitalized older adults, which varies between 18–35%, this condition is still underdiagnosed; it is estimated that around one-third of cases go unrecognized. The incidence of delirium among older adults varies depending on the hospital setting, reaching 80% in intensive care units and in terminal patients, for example.^{2,3}

This condition is associated with an increased risk of mortality in hospital and within 12 months of discharge, in addition to a greater frequency of institutionalization and dementia.⁴ Delirium triggers a cascade of events that can lead to potentially progressive functional decline, increased length of hospital stay, the need for additional care staff, as well as increased morbidity and mortality, which lead to a significant increases in health care costs.⁵

Although it can be due to a single cause, the etiology of delirium is predominantly multifactorial. Its development involves a close relationship between the individual's vulnerability and precipitating factor(s). Factors associated with vulnerability (or predisposing factors) are dementia and previous cognitive impairment, visual impairment, a history of alcohol abuse, age > 70 years, multiple comorbidities, and previous psychiatric or neurological diseases.⁶ Many of these components are immutable or poorly modulated in clinical settings.

However, a number of potential precipitating factors are often preventable or treatable. Thus, it is essential to know the most frequent causes of delirium to ensure quality care for older patients.

Literature review on precipitating factors of delirium

Articles were selected after searching MEDLINE (via PubMed) and Embase using the terms “Delirium AND” “risk factors” OR “precipitating factors”. Selected articles included hospitalized patients and were comprehensive in relation to the population; classic articles that initiated research on this topic were also included according to informal criteria.

The use and abrupt withdrawal of psychoactive medications are commonly associated with delirium, especially drugs with a high anticholinergic load or hypnotic-sedative action.⁷ One or more psychoactive drugs contributed to the development of at least 40% of delirium cases, principally sedatives, anxiolytics, narcotics, H1 and H2 blockers, and antipsychotics.⁸ In addition to drugs, other frequent situations can be considered precipitating factors, such as pain,

physical restriction, and immobility, dehydration, the use of devices such as feeding tubes, urinary catheters, infectious conditions, malnutrition, ischemic heart disease, hypoxemia, surgical procedures, etc.^{9,10}

In 1992, an article on the risk factors for delirium among hospitalized older adults was published in the *Journal of the American Medical Association*, which concluded that patient-related factors prior to admission (ie, predisposing factors) affected the development of delirium more than the reason for hospitalization or care-related issues. Nevertheless, an increased risk of delirium was independently associated with symptomatic infection (OR 1.92; CI 1.04–3.57), room temperature > 37.2° C (OR 2.09; CI 0.96–4.57), uncontrolled pain (OR 1.89; CI 1.09–3.29), and psychotropic drug use (OR 2.5; CI 1.15–5.43).¹¹

In 1996, Inouye et al. reported on precipitating factors for delirium in hospitalized older adults, finding that the relative risk increased 4.4 times when physical restraints were used, 4 times in malnourished patients, 2.9 times in patients taking ≥ 3 medications, and 2.4 times in patients using urinary catheters.⁷

Several studies have described precipitating factors for delirium, although they were generally aimed at specific populations, such as post-operative and cancer patients.^{12,13} Another publication on the topic in the general population provides an extensive review of > 100 predisposing and precipitating factors, classified as surgical, systemic disease/ organic dysfunction, metabolic, pharmacological, iatrogenic/environmental, trauma, and biomarker- and neurotransmitter-related.¹⁴

Given the high rate of complications related to this condition, greater training is needed to recognize the syndrome and identify older adults at greater risk. The main objective of this article was to describe the main factors that precipitate delirium. It is essential to identify these factors to plan preventive actions, as well as to quickly diagnose the immediate cause, thus allowing implementation of measures to reverse or stabilize the condition, minimizing inflammatory/infectious/metabolic damage to the brain, potentially reducing delirium severity and length, which are linked to complications and permanent damage associated with an acute confusional state.⁵

To date, no specific medication has shown robust effectiveness for reducing the incidence, length, or severity of delirium. Psychotropic medications are prescribed only for severe behavioral symptoms involving a risk of harming self or others or removing invasive devices.¹⁰ Thus, the most important way to minimize patient complications is to correct the precipitating cause of delirium, which is why early identification is so essential.

DELIRIUM+ as a mnemonic device

To promote teaching and care focused on clinical reasoning and, thus, the prevention, early detection, and management of delirium, we propose a mnemonic device, DELIRIUM, based on its main causes. Although originally developed for Portuguese, the acronym's items, which are described below, translate well enough for use in English. Subsequent to this proposal, a pilot study of the clinical applicability of the instrument will be conducted.

Table 1 (supplementary material) describes the categories for each letter of the acronym: Discomfort, Electrolytes/metabolism, Locale/environment, Infections, urinary/fecal Retention, clinical complications, Uremia, and Medications. The details of each category, including precipitating factors, are presented in the supplementary material.

A second acronym, MAIS (meaning 'plus'; represented by the + symbol), was added to promote delirium prevention and non-pharmacological management: Mobility, Assistant/companion, Interaction, and Sleep. Descriptions of each item are provided in Table 2 (supplementary material).

Figure 1 is a visual presentation of the DELIRIUM+ mnemonic device.

D	DISCOMFORT
E	ELECTROLYTES
L	LOCALE/ENVIRONMENT
I	INFECTIONS
R	URINARY/FECAL RETENTION
I	CLINICAL COMPLICATIONS
U	UREMIA
M	MEDICATIONS

+
M obility
A ssistant/Companion
I nteractions
S leep and Psychotropic substances

FIGURE 1. DELIRIUM+ mnemonic device.

at psychobehavioral symptoms, which can increase delirium severity and length.

Conflicts of interest

The authors declare no conflict of interest.

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Author contributions

RGBM: Project administration, formal analysis, data curation, writing – review & editing, supervision, validation. MB: writing – original draft, writing – review & editing, methodology, visualization. RRDC: data curation, writing – review & editing, supervision, validation.

FINAL CONSIDERATIONS

To increase health care quality for older adults, patient safety is essential in all scenarios. Our proposed mnemonic device could benefit education about delirium, a common condition among older patients, and help standardize related care processes. It could lead to faster diagnosis of precipitating factors, quicker clinical decision-making aimed at controlling causal factors, and may minimize actions directed exclusively

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