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LETTER TO EDITOR

Neuropsychiatric Manifestations of Cognitively Advanced Idiopathic Normal Pressure Hydrocephalus?

Dear Editor,

Neuropsychiatric manifestations, which may accompany nearly 90% of the patients with dementia, can cause marked disability in patients and increase caregiver distress. However, the prevalence and characteristics of these symptoms in normal pressure hydrocephalus (NPH) rather remain to be elucidated.[1]

The original contribution by Mathew *et al*., illustrating the results of the neuropsychiatric profile of their group of patients with NPH, may add crucial perspectives in this regard.[2] In conclusion of their study, they found that neurobehavioral abnormalities are common in patients with cognitively advanced NPH, but the intensity of involvement was found to be less when compared to Alzheimer disease (AD). They also remarked apathy as the most common domain of impairment among these manifestations which had also been pronounced previously.[3] The results of this study are important, considering that the related literature data are strictly rare. However, there may be some additional points to be discussed for a proper interpretation of the study results.

First, the main limitation of the study was that their group consisted of patients with cognitively advanced idiopathic NPH (iNPH). Therefore, the neuropsychiatric abnormalities in earlier stages of the disease could not be determined, which's documentation would certainly be more important for clinical concerns. It has been demonstrated that Cambridge Behavioral Inventory can provide a reliable differentiation between distinct types of dementia including benign variant frontotemporal dementia and AD from Parkinson's disease and Huntington disease.[4] On the other hand, it is also known that neuropsychiatric manifestations may accompany all types of dementia throughout the disease progression. However, their involvement phases of the disease differ according to the type of dementia. Arrestingly, identification of the neuropsychiatric manifestations in the early phase of the dementia subtypes is more critical, as their presence is rather nonspecific (hence invaluable in the discrimination of dementia subtypes) in the late phase of dementia. Remarkably, in the other report[3] referred by the authors, the cognition of the patients was better than the patients included in the study by Mathew *et al*. Furthermore, the cognitive status of the patients in the study by Kito *et al*. was comparable with AD patients involved in the same report ($P = 0.991$) which was not the case in this study by Mathew *et al*. ($P = 0.033$). Ergo, I think that comparing the neuropsychiatric manifestations between patients with NPH and AD which were distinct in terms of cognitive profile, would not be rational. Furthermore, in addition to the different evaluation methods (distinct behavioral scales were used), it may also be irrational to compare the disturbances of neurobehavioral domains in their group of patients with NPH and those included in the study by Kito *et al*. which also differed in terms of cognition.

In addition, I would like to draw attention to the unexpected rates of dementia subtypes in their cohort. While 153 of the patients were diagnosed with iNPH, only 78 of them were diagnosed with AD (total number of the patients: 825). The results of the various global prevalence studies (from developed countries to less developed countries) have consistently shown that AD is the most common subtype of dementia which accounts for 35.4%–43.5% of all types of dementia.[5-7] On the other hand, NPH is strictly a less common diagnosis according to AD (prevalence of NPH: 0.2% in those aged 70–79 years;[8] the prevalence of AD: 4% in those aged 75–79 years[9]). Hence, I wonder how the authors explain these extraordinary rates of dementia subtypes in their cohort? Finally, it has been recently emphasized that a substantial ratio of patients with NPH may have comorbid neurodegenerative diseases such as AD, dementia with Lewy bodies, and progressive supranuclear palsy.[10,11] Hence, it can be understood that a possible underdiagnosed comorbid neurodegenerative disease in the iNPH group would certainly influence the results and conclusions of this study. Therefore, although the authors mention that patients with coexisting neurological illness of the central nervous system were excluded from the study, I wonder if they can explain the diagnostic procedure of NPH and algorithm of excluding these possible neurodegenerative comorbidities in more detail which would give chance for a better interpretation of the study results.

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Conflicts of interest

There are no conflicts of interest.

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