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LETTER TO THE EDITOR OPEN ACCESS

RESEARCH STUDIES

Impact of Multiple Low-Anticholinergic Drugs on Older Inpatients: Insights From the J-HAC Study

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To the Editor,

The use of potentially inappropriate medications (PIMs) in older adults is a serious clinical concern, due to the high prevalence of polypharmacy in this population. Medications with anticholinergic properties comprise not only drugs that directly block cholinergic receptors but also those that exhibit anticholinergic effects through indirect mechanisms. When these agents are taken into account, a substantial number of medications commonly used in routine clinical practice—including both prescription and over-the-counter products—can be classified as having anticholinergic activity. Consequently, the cumulative anticholinergic burden is often underestimated, especially when multiple drugs with mild anticholinergic activity are used concurrently, making it difficult to recognize the total risk in clinical practice.

The cumulative impact of anticholinergic burden has been well documented [1]. During hospitalization, it can precipitate acute neuropsychiatric symptoms such as delirium and attention disturbances, while over longer periods it has been associated with cognitive decline and an increased risk of dementia [2–4]. Moreover, it contributes to physical deterioration through falls and declines in activities of daily living, and has also been associated with higher mortality [5]. Peripheral effects, including urinary retention, constipation, dry mouth, and visual disturbances, further compromise the quality of life of older adults. Therefore, quantitative assessment of anticholinergic burden is essential to ensure medication safety in geriatric care.

Several anticholinergic risk scales, such as the Anticholinergic Risk Scale (ARS) and the Anticholinergic Cognitive Burden (ACB), have been developed internationally to address this issue [6, 7]. In Japan, the Japanese Anticholinergic Risk Scale (JARS) was released in 2024 by the Japanese Society of Geriatric Pharmacy, assigning scores to 158 drugs based on their anticholinergic properties [8]. However, it remains unclear whether the overall anticholinergic burden among older inpatients arises primarily from the use of a few high-risk drugs or from the accumulation of multiple low-score drugs.

This study aimed to clarify the composition of total anticholinergic burden among older patients admitted to acute geriatric wards and to provide insights for optimizing prescribing practices. We analyzed data from the multicenter Japan Hospital-based Acute Care for the Elderly (J-HAC) study, which included inpatients aged 65 years or older admitted to acute geriatric wards across multiple hospitals in Japan [9, 10]. For the present analysis, data from Nagoya University Hospital, Osaka University Hospital, and the University of Tokyo Hospital were used. Among the overall J-HAC cohort, 816 patients were included in the present analysis, enrolled between October 2019 and July 2023. All regularly prescribed medications during hospitalization were extracted. Anticholinergic burden was assessed using JARS, and total scores for each patient were calculated based on the assigned 1-, 2-, and 3-point values for each drug. The total scores were subsequently decomposed by point category to determine their proportional contributions, and the compositional distribution across total score categories (1 to ≥ 5) was analyzed.

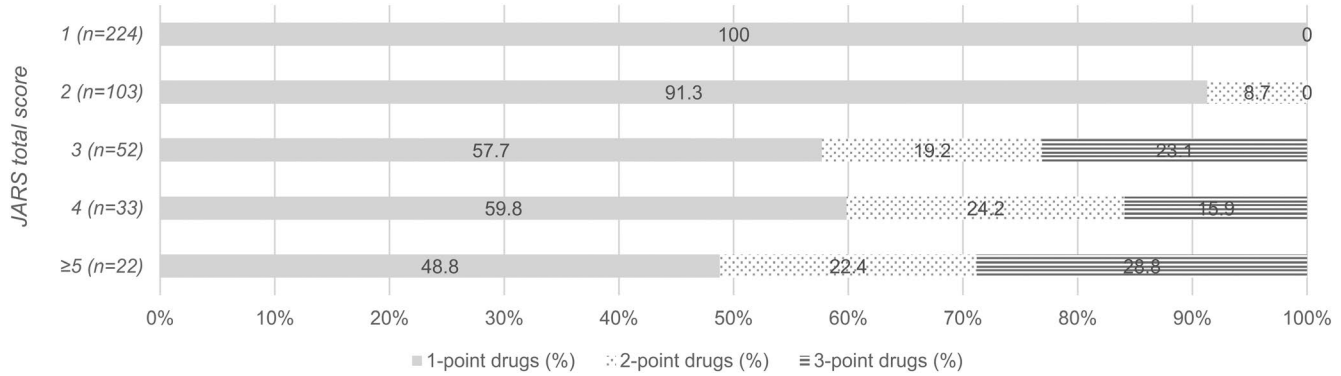

FIGURE 1 | Distribution of Anticholinergic Drug Use by Total JARS. Bars represent the proportion of 1-, 2-, and 3-point drugs within each total score category. JARS, Japanese Anticholinergic Risk Scale.

The median (IQR) total JARS score among all patients was 1 (0–2). Regarding score composition, 1-point drugs contributed the largest proportion, accounting for approximately 80% of the total score. The contributions of 2- and 3-point drugs were limited to about 13% and 11%, respectively, indicating that the overall anticholinergic burden was mainly driven by the accumulation of 1-point drugs (Table S1). Although the proportions of 2- and 3-point drugs slightly increased with higher total scores, a similar trend persisted even among patients with total scores ≥ 5 (Figure 1).

These findings suggest that in acute geriatric wards, anticholinergic burden is primarily formed by the accumulation of multiple low-score drugs rather than by the use of a few high-risk agents. This highlights the importance of comprehensive medication reviews that evaluate the overall regimen rather than focusing solely on high-potency drugs. Incorporating the JARS into routine prescription review may help minimize the cumulative use of low-score medications and contribute to the prevention of geriatric syndromes such as delirium, falls, and cognitive decline. This study provides valuable evidence to support safer prescribing strategies for older inpatients in Japan.

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Ethics Statement

The study was approved by the Ethics Committee of each participating facility. Written informed consent, including consent for publication of this case report, was obtained from the patient or a family caregiver in accordance with the Declaration of Helsinki.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Table S1:** Distribution and composition of JARS total scores by point category.