Malnourishment masquerading as dementia

Inadequate social support associated with cognitive impairment

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Adequate nutrition is crucial to cognition. Recognized as a global health concern by the World Health Organization,[1] malnutrition refers to an imbalanced intake of energy or nutrients and includes these categories: being overweight—which is a risk factor for hypercholesterolemia, stroke, and diabetes mellitus, all of which could lead to cognitive impairment[2]; being underweight, a state in which inadequate intake of nutrients and micronutrients can cause cognitive decline[2]; and being of normal weight but not consuming adequate levels of necessary nutrients and micronutrients,[1] which is an understudied potential contributor to cognitive dysfunction. Most malnourishment studies focus on nutrient excesses and deficiencies with little emphasis on the socioeconomic factors that influence associated patient behaviour.

Alzheimer disease and related dementias are common: an estimated 564,000 Canadians are currently living with dementia; 76,000 Canadians are diagnosed with dementia annually; and 1 in 5 Canadians care for someone living with dementia.[3-5] Although malnutrition can masquerade as dementia, recognizing malnourishment can be challenging.[6] Older adults presenting to their family physicians may hide their inability to prepare nutritious meals owing to fear of losing their independence. Given recent trends in the grocery industry (eg, introduction of self-service checkouts, urban relocation of stores), physicians should be aware of normal weight malnutrition when assessing cognitive decline, especially among patients with low incomes.[7]

Herein, we present a patient diagnosed with possible dementia whose cognition and memory improved following a move to long-term care. Previously she had lived alone, and the quality of her diet had declined owing to a lack of food options in her area. Moreover, given that her weight was in the normal range, the possibility of malnutrition had not been considered initially. Considering that dementia is a nonreversible disorder, it is likely she had malnutrition-induced cognitive decline misdiagnosed as dementia.

Case

A 92-year-old woman presented with a 2-year history of progressive cognitive decline. Detailed history from the patient and her family revealed 5 major symptoms: short-term memory loss, inability to master new tasks, struggles with language and reading, difficulty organizing thoughts logically, and problems coping with new situations. She had no serious past medical history (no depression or sleep disorders) and no family history of neurodegenerative disease. She had been a homemaker with no history of workplace exposure. She denied any other symptoms and stated that she ate well and slept well. She had lived alone for the past 23 years following the death of her spouse, but she was socially active with daily interactions with multiple friends and relatives. Findings of general physical and neurologic examinations were normal. Routine bloodwork results were normal. She had not had any imaging tests performed. She had scored 26 out of 30 on the Mini-Mental State Examination (MMSE) and 25 out of 30 on the Montreal Cognitive Assessment (MoCA). Her body mass index was 18.7 kg/m^2.

Editor's key points

- When assessing patients with cognitive decline, every effort should be made to rule out other factors before diagnosing them with dementia.
- Normal weight malnutrition is a possible reversible factor contributing to cognitive decline.
- Elderly individuals may conceal food acquisition difficulties out of fear that the perceived loss of independence could result in being forced out of their homes and into long-term care homes.
- Changes in grocery store design and services often present intimidating challenges for older people and may contribute to malnutrition.

Points de repère du rédacteur

- Lors de l'évaluation de patients ayant un déclin cognitif, tous les efforts doivent être déployés pour exclure d'autres facteurs possibles avant de poser un diagnostic de démence.
- Une malnutrition malgré un poids normal peut être un facteur réversible susceptible de contribuer au déclin cognitif.
- Les personnes plus âgées peuvent taire des problèmes d'alimentation de peur que l'impression de leur perte d'autonomie puisse faire en sorte qu'elles soient forcées de quitter leur domicile pour être placées en centre de soins de longue durée.
- Les changements dans l'aménagement et dans les services des épiceries constituent souvent des problèmes intimidants pour les personnes âgées et peuvent contribuer à la malnutrition.

Six months later her MMSE score had dropped to 24 out of 30 and her MoCA score was 23 out of 30. A diagnosis of dementia, possibly Alzheimer disease, was discussed with the patient and her family.

Shortly thereafter, the patient moved into an assisted living long-term care facility. Within weeks, her family noticed a marked improvement in her cognitive abilities. Mental status testing was repeated 3 months after her relocation and produced scores of 29 out of 30 on both the MMSE and the MoCA. In discussing her improvement, the patient noted the main change she had experienced in life was an improved diet. She confessed that over the past 2 years, her daily diet had consisted almost entirely of chocolate chip cookies, toast with peanut butter, potato chips, and tea. When asked why her diet had declined, she observed that her local grocery store had closed and all the next closest stores were distant and accessible only by automobile. She found these stores to be unfriendly, busy, and hectic. Moreover, she found the presence of self-service checkouts to be intimidating. She preferred to walk to a local convenience store with friendly, chatty staff that sold cookies, bread, peanut butter, and potato chips. She was aware that her diet had become completely unacceptable, but she was afraid to tell anyone lest she be "forced out of her house and into some old age home."

Discussion

Being of normal weight (maintained via caloric intake) is insufficient to guarantee acceptable nutritional status, as inadequate nutrient and micronutrient intake can predispose one to greater disease susceptibility.[8] In this case, the patient had a body mass index of 18.7 kg/m^2, a borderline normal score given age-based adjustments.[9]

While dietary habits played a role in this patient's situation, they must not overshadow the underlying psychosocial and societal factors leading to her condition. This woman was reluctant to disclose the difficulties she faced in acquiring groceries, born of the fear that her lack of self-sufficiency would prompt her loved ones to place her in a long-term care home—a reality that elderly people face frequently, fueling a reluctance to seek help and a strong desire to be perceived as independent.[10] Her unwillingness to use the self-service checkouts reflects the trepidation that many older adults feel in such situations.[11]

This patient's reliance on the limited food selection at a nearby convenience store exemplifies the emerging issue of *food deserts* and *food oases.* A food desert is a geographic area in which access to affordable nutritious food is limited (typically >1.5 km away), in contrast to a food oasis where access to fresh vegetables, fruit, and other food items is readily available.[12,13] These designations encompass the accessibility of food through the size and proximity of retailers as well as product quality and variety. The products available in food deserts are frequently processed to extend shelf life, being high in sugar and fat but correspondingly low in micronutrients. Food desert areas are often inhabited by elderly people with reduced mobility and lower incomes, making them a less attractive market for large grocers.[14] They are emerging as substantial contributors to diet-related diseases,[15] especially for elderly people owing to neighbourhood attachments and travel limitations.[16-18] This case demonstrates the ease by which seemingly simple losses related to social determinants of health can accelerate the development of illness.

Data and studies suggest that retailers disproportionately neglect elderly people in their customer profiles.[19,20] Although some retailers offer designated premarket hours during which those aged 65 or older may shop in a calmer environment,[21] this relegates these shoppers to the margins, depriving them of the same convenience and equity afforded to younger customers.

Conclusion

This case demonstrates the impact that social determinants of health—in this case, food distribution and accessibility—can have on the well-being of elderly people. More research regarding the pathophysiology of malnutrition-induced cognitive impairment is necessary, but the importance of social determinants of health, particularly those related to the environment and community, must be emphasized, especially as they relate to the health of older adults.

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Competing interests
None declared

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