EDITORIAL

The growing evidence of neurodegenerative diseases risk factors

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The increasing rate of dementia prevalence represents a menace to the world health system and our society. At present, there are 55 million people living with dementia and this number will increase to 78 million by 2030[1]. Age, certain genes, and family history represent the main non-modifiable risk factors for dementia development[2]. Nevertheless, there are many modifiable elements that could play a potential role for dementia prevention[3].

The 2020 report of the Lancet commission on dementia prevention added three "new" risk factors for dementia (excessive alcohol consumption, head injury, and air pollution) to their prior report from 2017 that included the following nine factors: less education, hypertension, hearing impairment, smoking, obesity, depression, physical inactivity, diabetes, and infrequent social contact[4]. Further, there are several reports finding other associated factors with dementia, these risk factors include severe mental illness (not only depression)[5], fibromyalgia[6], gut microbiota dysfunction[7], and among others.

Despite Alzheimer's disease (AD) is the most common type of dementia and the risk factors described above are also described precisely for AD[8]; it is important to recall that "dementia" is an umbrella term that is often used to describe neurodegenerative (or non-neurodegenerative) diseases of different etiologies. One potential next step to better characterize risk factors in specific neurodegenerative diseases is the development of studies differentiating risk factors for specific neurodegenerative etiologies. Let's take Parkinson's disease (PD) as an example, this is a complex disease that typically starts with motor and neuropsychiatric clinical manifestations but is frequently accompanied by dementia as the disease progresses[9]. Interestingly, there are risk factors described for PD that are "exclusive" for this neurodegenerative disorder such as the exposure to pesticides[10]. Furthermore, people with an established diagnosis of bipolar disorder (odds ratio, 3.35; 95% CI, 2.00–5.60; I^2 = 92%)[11] or schizophrenia (odds ratio, 4.63 95% CI, 1.76–12.19; p < 0.01)[12] have an increased risk for developing PD. Interestingly, diabetes, which is one of the 12 risk factors described by the Lancet commission on dementia prevention, was identified as a component that could play a role on delaying PD onset in a sample of Mexican patients with PD. For more details of this study, please see the article by Cervantes-Arriaga et al. published in the current issue.

Given the health emergency of the recent pandemic, different studies were developed to describe the outcomes in patients affected by COVID-19. One of the frequently observed consequences in this population is different neurological manifestations[13]. A cross-sectional study identified an increased risk of cognitive decline, specifically in executive function in patients with COVID-19 and a history of hospitalization compared with outpatients[14]. In this issue, Anaya-Escamilla et al. described the likely role of COVID-19 and diabetes mellitus in the development of cognitive decline.

A great effort in terms of dementia risk factors recognition is ongoing. Disclosure of this information needs to become greater and be spread among the medical and non-medical communities, especially in low-income developing countries where the prevalence of dementia will rise in the following years.

References

1. Dementia. Available from: https://www.who.int/news-room/fact-sheets/detail/dementia [Last accessed on 2022 Dec 07].
2. Deckers K, van Boxtel MP, Schiepers OJ, de Vugt M, Sánchez JL, Anstey KJ, et al. Target risk factors for dementia prevention: a systematic review and Delphi consensus study on the evidence from observational studies. Int J Geriatr Psychiatry. 2015;30:234-46.
3. Yu JT, Xu W, Tan CC, Andrieu S, Suckling J, Evangelou E, et al. Evidence-based prevention of Alzheimer's disease: systematic review and meta-analysis of 243 observational prospective studies and 153 randomised controlled trials. J Neurol Neurosurg Psychiatry. 2020; 91:1201-9.
4. Livingston G, Huntley J, Sommerlad A, Ames D, Ballard C, Banerjee S, et al. The Lancet commissions dementia prevention, intervention, and care: 2020 report of the Lancet commission the Lancet commissions. Lancet. 2020;396:413-46.
5. Richmond-Rakerd LS, D'Souza S, Milne BJ, Caspi A, Moffitt TE. Longitudinal associations of mental disorders with dementia: 30-year analysis of 1.7 million New Zealand Citizens. JAMA Psychiatry. 2022;79:333-40.
6. Tzeng NS, Chung CH, Liu FC, Chiu YH, Chang HA, Yeh CB, et al. Fibromyalgia and risk of dementia-a nationwide, population-based, cohort study. Am J Med Sci. 2018;355:153-61.
7. Cabrera C, Vicens P, Torrente M. Modifiable risk factors for dementia: the role of gut microbiota. Curr Alzheimer Res. 2021;18:993-1009.
8. Silva MV, Loures CD, Alves LC, de Souza LC, Borges KB, Carvalho MD. Alzheimer's disease: risk factors and potentially protective measures. J Biomed Sci. 2019;26:33.
9. Aarsland D, Creese B, Politis M, Chaudhuri KR, ffytche DH, Weintraub D, et al. Cognitive decline in Parkinson disease. Nat Rev Neurol. 2017;13:217-31.
10. Ascherio A, Chen H, Weisskopf MG, O'Reilly E, McCullough ML, Calle EE, et al. Pesticide exposure and risk for Parkinson's disease. Ann Neurol. 2006;60:197-203.
11. Faustino PR, Duarte GS, Chendo I, Caldas AC, Reimão S, Fernandes RM, et al. Risk of developing Parkinson disease in bipolar disorder: a systematic review and meta-analysis. JAMA Neurol. 2020;77:192-8.
12. Kuusimäki T, Al-Abdulrasul H, Kurki S, Hietala J, Hartikainen S, Koponen M, et al. Increased risk of Parkinson's disease in patients with schizophrenia spectrum disorders. Mov Disord. 2021;36:1353-61.
13. Heneka MT, Golenbock D, Latz E, Morgan D, Brown R. Immediate and long-term consequences of COVID-19 infections for the development of neurological disease. Alzheimers Res Ther. 2020;12:69.
14. Becker JH, Lin JJ, Doernberg M, Stone K, Navis A, Festa JR, et al. Assessment of cognitive function in patients after COVID-19 infection. JAMA Netw Open. 2021;4:e2130645.