Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
P.0434
Pre-existing vitamin D supplementation as a protective factor in COVID-19 infection in elderly schizophrenia and dementia inpatients: a case series

A. Shelef 1, S. Dahan 1, S. Weizman 2, E. Bloemhof Bris 3

1Lev-Hasharon mental health center and Sackler faculty of medicine Tel-Aviv university, Management, Zur Moshe, Israel; 2Abaranel Mental Health Center and Sackler Faculty of Medicine- Tel-Aviv University, Open ward, bat-yam, Israel; 3Lev-Hasharon Mental Health Center and Haifa University- Psychology department, Management, Zur Moshe, Israel

Background: Significant risk factors for severe Covid-19 infection include old age, chronic illnesses such as diabetes, hypertension, cardiovascular, Chronic obstructive pulmonary disease[1], dementia [2]) as well as schizophrenia [3]. In contrast, high Vitamin D levels are known to augment immune activity and to reduce the severity of viral infections such as influenza virus and COVID19.

Recently, a possible association between the likelihood of Covid-19 infection, Covid-19 severity, and Vitamin D blood levels was reported. An association has been found between low Vitamin D levels and an increased likelihood of Covid-19 infection [4,5]. Furthermore, low Vitamin D levels seem to be linked to higher likelihood of hospitalization and severity of symptoms in Covid-19 infection [4]. Low Vitamin D levels show a tendency to be a potential risk factor for Covid-19 infection and hospitalization, independent of demographic characteristics and medical conditions.

Aim: to assess the possible association between Vitamin D long term supplementation and Covid-19 symptomatic severity and complications of Covid-19 infection in elderly psychiatric inpatients, a highest at-risk group.

Methods: a retrospective case series study. Demographic and clinical data of 14 elderly Covid-19 positive inpatients, suffering from dementia or schizophrenia, and other medical conditions were extracted from their medical records. All patients were maintained on 800IU daily dose of Vitamin D months prior to the infection(mean=20 months). The cognitive functioning as measured in Mini-Mental State Examination (MMSE) scores were performed right away at their return from hospitalization due to Covid 19 infection and were compared to the scores six months before infection, using two-tailed paired sample t-test.

Summary: During the month of September 2020, when the second wave of the novel Coronavirus Covid-19 culminated in Israel, an outbreak of the epidemic spread in our Holocaust survivor’s elderly residence. 31 patients most probably were exposed to a confirmed Covid-19 positive elderly patients. In result, 14 patients, all suffering from dementia or schizophrenia tested positive and immediately placed in quarantine in Corona departments in general hospitals.

Those elderly patients (mean age 82) were expected to present an aggravated version of the virus, according to their affiliation to the highest at-risk groups. They suffered from schizophrenia, N =8/14; dementia, N = 6/14 and other at-risk physical illnesses such as diabetes (29%), COPD (7%) and hypertension (57%).

Contrary to the expectations, most of the patients were either asymptomatic (28%) or presented very few symptoms. Only two inpatients needed oxygen support, and only one of them stayed dependent on it after release from a Corona department. No one needed intensive care unit (ICU) intervention.

No significant difference in cognitive function was observed beforehand and after the infection(mean MMSE 13/30, p=NS).

Conclusions: according to our unique case series study pre-existing Vitamin D supplementation for a long period before Covid-19 epidemic may reinforce immunity and reduce Covid-19 severity and complications in elderly psychiatric inpatients.

No conflict of interest

References
[1] Atkins, J.L., Masoli, J.A., Delgado, J., Pilling, L.C., Kuo, C.L., Kuchel, G.A., Melzter, D., 2020. Preexisting comorbidities predicting COVID-19 and mortality in the UK Biobank community cohort. The Journals of Gerontology: Series A 75 (11), 2224-2230.
[2] Yu, Y., Travaglio, M., Popovic, R., Leal, N. S., & Martins, L. M. (2020). Alzheimer’s and Parkinson’s diseases predict different COVID-19 outcomes, a UK Biobank study. medRxiv.
[3] Kozloff, N., Mulsant, B. H., Stergiopoulos, V., & Voneikos, A. N. (2020). The COVID-19 global pandemic: implications for people with schizophrenia and related disorders. Schizophrenia Bulletin.
[4] Merzon, E., Tworowsky, D., Gorohovski, A., Vinker, S., Golan Cohen, A., Green, I., Frenkel-Morgenstern, M., 2020. Low plasma 25 (OH) vitamin D level is associated with increased risk of COVID-19 infection: an Israeli population-based study. The FEBs journal 287 (17), 3693-3702.
[5] Melzter, D.O., Best, T.J., Zhang, H., Vokes, T., Arora, V., Solway, J., 2020. Association of vitamin D status and other clinical characteristics with COVID-19 test results. JAMA network open 3 (9) e2019722-e2019722.
Background and Aims: The ongoing coronavirus disease 2019 (COVID-19) pandemic caused by severe acute respiratory syndrome coronavirus (SARS-CoV)-2 is having unprecedented effects in healthcare systems, economies and society [1]. Although the respiratory tract is the primary target of SARS-CoV-2, emerging evidence suggests that the virus may also invade the central nervous system (CNS), leading to numerous neurological issues [2]. In particular, people with Alzheimer’s disease (AD) are vulnerable at risk of contracting COVID-19 and present more severe forms and worse outcomes. Social isolation measures (e.g., visitation bans, stay-at-home orders, and lockdowns in care facilities), which are necessary for controlling the spread of SARS-CoV-2 and reducing thus the disease transmission, could cause an imbalance in the lifestyle and mental health, increasing the risk of hospitalization and mortality for people suffering from AD [3]. This situation can cause a wide range of psychological and clinical problems, such as agitation, anxiety, irritability, delirium, aggressiveness, depression and sleep disorders that may contribute to the acceleration of neurodegenerative processes. Given the high prevalence of AD individuals affected by COVID-19, the present review provides an updated overview on published literature on the psychological impact of COVID-19 pandemic in patients affected by AD.

Methods: A literature search was conducted in accordance with the PRISMA guidelines. PubMed database in English language was searched for publications before 6th April 2021 using the keywords: “Alzheimer’s disease” AND “COVID-19” AND “psychology”. Reviews, clinical studies and meta-analyses were also included with no geographic limitations. All fields were selected and no other filters were applied.

Results: A total number of 83 published manuscripts were included (67 research articles, 14 reviews, 1 clinical study and 1 meta-analysis). As expected, the majority of AD patients were women. Interestingly, a general function and cognitive decline has been often observed in demented subjects, leading to an impaired performance in activities of daily living. In regard with the most frequently reported behavioral symptoms related to social distancing, AD patients presented increased mood, sadness, apathy, agitation, hallucinations, anxiety, irritability, sleep disorders such as insomnia or sleep-wake cycle alterations. In addition, these symptoms were greater in patients affected by moderate or severe AD.

Conclusions: Current literature reported an increased burden of behavioral symptoms in the majority of AD patients, suggesting a complex and bidirectional relationship with COVID-19. These symptoms were probably triggered by deprivation or reduced social contact, loneliness during the lockdowns, decreased daily activities, lack of physical contact with family members. In turn, an impaired cognitive performances may exacerbate mental health concerns in these patients, which may accelerate the neurodegeneration in AD patients. Therefore, during and after the pandemic, implementation of caregiver support, the presence of skilled nursing home staff or the implementation of new technology solutions are essential to maintain social interaction and to provide adequate support to people suffering from AD.

No conflict of interest

References
[1] Park, M., Cook, A.R., Lim, J.T., Sun, Y., Dickens, B.L., 2020. A systematic review of COVID-19 epidemiology based on current evi-dence. J. Clin. Med. 9, 967.
[2] Mao, L., Jin, H., Wang, M., Hu, Y., Chen, S., He, Q., Chang, J., Hong, C., Zhou, Y., Wang, D., et al., 2020. Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China. JAMA Neurol 77, 683–690.
[3] Gil, R., Arroyo-Aníló, E.M., 2021. Alzheimer’s Disease and Face Masks In Times of COVID-19. J Alzheimers Dis 79, 9-14. doi:10.3233/JAD-201233.

doi: 10.1016/j.euroneuro.2021.10.408

P.O436
Locus coeruleus in the pathogenesis of Alzheimer’s disease: a systematic review
Y. Chen 1, R. Hou 2

1 University of Cambridge- UK, Department of Medical Sciences, Southampton, United Kingdom; 2 University of Southampton, Department of Psychiatry, Southampton, United Kingdom

The locus coeruleus is located in the posterior area of the pons and is the major site of synthesis and secretion of the catecholamine neurotransmitter, noradrenaline [1]. Previous studies of Alzheimer’s disease pathology have mainly focused on the role of the hippocampus on cognition but have largely neglected the LC. LC cells are involved in the regulation of attention and arousal [2]. The noradrenaline released from neurons in the LC has an excitatory effect on the hippocampus and cortex, so this region is also important for cognitive functions such as learning and memory [3]. The loss of neurons in the LC and has been demonstrated to be a pathological characteristic of AD, as well as degeneration and enlarged cell bodies in people with AD compared with those without AD [4].

Recent research has found extensive LC degeneration and noradrenaline (NA) depletion are among the earliest pathologies in AD. There has been growing research interest in the role of the LC in the progression of AD; however, research work has been conducted using different study designs and methodologies; there has been no work which has reviewed and synthesised all available evidence. This review aims to address this gap in order to allow for a more comprehensive understanding of how the LC plays a role in the pathogenesis of AD.

A systematic search of the literature was performed on online databases including PubMed and Web of Science. The PICOS framework was used to guide the search strategy and the studies selected in this review included animal, human post-mortem and human imaging studies, based on the inclusion/exclusion criteria. Overall, the initial search identified 63 relevant papers. After abstract and title screening and duplicate removal, this was reduced to 41 papers and the subsequent full text articles were retrieved. After full text screening, a total of 22 papers were further check for eligibility and a total number of 12 papers were included in this review. Key study characteristics - including study de-