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Subjective Cognitive Decline: Are there Reliable Biomarkers?

Background: Subjective Cognitive Decline (SCD) is a common entity among elderly population and despite that it has been associated with an increased risk of future progression to Alzheimer's Diseases (AD) or other dementias, is still unexplored. The examination of this stage of AD spectrum is among the most important research subjects currently.

Methods: The literature review was performed across a number of electronic databases in October 2020, including Medline (via PubMed), EMBASE, PsycINFO (Psychological Abstracts), Cochrane Database and CINAHL Database. Among the several terms, the search included the following: "subjective cognitive decline", "memory complaint", "neuropsychological assessment", "tests", "Subjective memory/cognitive impairment" and "subjective memory loss", "EEG", "MRI", "APOE4", "neuroimaging". The searches were not limited by date of publication or study design. Only English studies were included.

Results: 875 citations were identified, 432 papers were obtained, of which 80 were selected for containing neuropsychological examination, neuroimaging assessment and biomarker detection of SCD. Although they may not present detectable signs of disease, SCD score lower on several neuropsychological tests than the healthy controls (HC) and they also have a higher incidence of future cognitive decline. Regarding the APOE ϵ 4, the results provide mixed evidence linking coincident APOE ϵ 4-positive genotype and SCD. On the other hand, magnetic resonance imaging studies in SCD reveal a pattern of hippocampal atrophy similar to that of amnesic mild cognitive impairment, while brain connectivity as found after EEG examination shows aberrant connections and local dysfunction in several network metrics in the SCD compared to HC.

Conclusions: Narrative review provided mixed evidence linking worse neuropsychological performance, brain atrophy and brain network organization in SCD compared to HC. Though there was little evidence to suggest that a particular test predisposes individuals to developing SCD, several assessments found to be promising in order to discriminate this population.

Biography:

Magda Tsolaki received her PhD, specialty as a Neuropsychiatrist. She has been a Professor of Neurology since 2010 and currently she is the Head of the 1st University Department of Neurology (2017-2020) where she was committed to her clinical, educational and research work. Since November 2020 she is working also at Euromedica General Clinic. In 2004, she was invited as a visiting professor at the Boston University, Massachusetts, USA. She has founded the Greek Alzheimer Association in 1995 and the Greek Federation of Alzheimer's Disease (AD) in 2007, in which she is up to today the Chair, while also being the scientific director of two Public Dementia Units (founded by her in 2007 and 2009) for outpatients. The last five years she was invited to join as a member the Greek National Observatory for Dementia. She has given more than 516 lectures throughout Greece. She has participated in more than 60 funded research programmes and 31 funded clinical trials. In total, she has received 70 awards. Dr. Magda Tsolaki has been the main author of many Books (53), many abstracts in Greek (531) and International (489) Conferences, she is the first author or co-author in many Papers in Greek (285) and International Journals (477 - 396 in PubMed), (h-index=80 and more than 30.000 Citations in Google Scholar). She has participated as invited speaker in more than 105 meetings-conferences in English and 256 in Greek Language. Furthermore, she has been a reviewer for Conferences and Journals (430) and has organised 27 national and 5 international conferences on AD. Finally, she was one of the three or seven advisory members for 32 doctoral theses-completed.