Research Journal of Nervous System

Abstract

Can cochlear implantation improve neurocognition in the elderly?

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Abstract:

Introduction:

The association between cognition and hearing is well known. With regard to the growing number of older persons and the incidence of demential illness the question arises whether hearing rehabilitation might counteract cognitive decline in aging.

Material and Methods:

213 patients aged 67,78 years (mean, SD 9,52) suffering from severe to profound hearing loss and scheduled for cochlear implantation underwent a computer-based evaluation of neurocognitive functions prior to surgery. The visual based test battery (ALAcog) is composed of different subtests covering short- and long-term memory, processing speed, verbal fluency, attention, working memory and inhibition.

Results:

66 patients have been reassessed 6 months and 71 patients 12 months post implantation. Whereas most subtests improved after 6 months, long-term memory did not improve earlier than after 1 year (p = 0,00006). After 12 months neurocognition has significantly increased with regard to attention (p=0,00086), recall (p=0,00041), delayed recall (p =0,00069), inhibition (p = 0,0029), working memory (n-back= 0,023 and OSPAN-test p = 0,00001) as well as verbal fluency (p=0,00006). Executive functions improved the most. In general, improvement was statistically better for subjects with poor baseline results. Patients at the age of > 65 years improved in the same way as younger aged =<65 years.

Conclusion:

Cochlear implantation has a positive impact on cognitive abilities, mostly on executive functions even in patients with lower preoperative performance and older age. Further studies have to show, whether hearing restoration has a long-term effect on cognition and might even prevent demential illness.

Biography:

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Publication of speakers:

1. Völter, Christiane & Schirmer, C. & Röber, M. & Hinsen, D. & Dazert, S. & Bilda, K.. (2020). Neue Wege in der Hörrehabilitation nach Cochleaimplantation[New ways in hearing rehabilitation after cochlear implantation. HNO. 10.1007/s00106-020-00914-0.

2. Völter, Christiane & Schirmer, C. & Stöckmann, C. & Dazert, S.. (2020). Computerbasiertes Hörtraining in der Hörrehabilitation Erwachsener nach Cochleaimplantation[Computer-based auditory training for hearing rehabilitation of adult cochlear implant users. HNO. 10.1007/s00106-020-00898-x.

3. Völter, Christiane & Stöckmann, Carolin & Schirmer, Christiane & Dazert, Stefan. (2020). Tablet-based Telerehabilitation Versus Conventional Face-to-Face Rehabilitation After Cochlear Implantation: A Prospective Intervention Pilot Study (Preprint). 10.2196/preprints.20405

Citation: Völter Christiane;Can cochlear implantation improve neurocognition in the elderly?; Webinar on Neurologists and Neuroscience Education | London, UK | August 19, 2020