Editorial

Aging by itself produces some effects on hearing. It affects not only the organ of Corti, as one would understand from the famous Beatles song ‘When I get older, losing my hair...’ .... cells, but also the whole auditory process including the auditory central pathways and auditory brain areas. The different participants from a variety of disciplines attending the symposium, have emphasized the consequences of profound hearing loss in the elderly and the outcomes of cochlear implantation from auditory performance to quality of life.

Hearing impairment will increase dramatically in the elderly over the next years. At the present time, 50 to 60% of the population above 70 years of age suffers from a hearing loss (as defined by an elevated threshold of 25 dB from 0.5 to 4 KHz) with a range of difficulties with speech understanding ranging from mild to major issues especially in noisy conditions. In France, the prevalence of profound hearing loss in the population older than 74 years is around 37/1000 for about 65 million of its inhabitants. Due to the expected increase in the elderly population, the number of individuals suffering profound hearing loss will grow by more than two-fold in the next 40 years to reach an estimated 400,000 individuals in the year 2050. This would represent a relatively large elderly population with potential needs for hearing treatment, with cochlear implantation for consideration for the more severe cases.

Restoration of hearing by implantable devices has been proven to be efficient and cost-effective in the elderly. In our cochlear implant center, a reference center for adults in the Paris region, 27% of cochlear implantations are performed in adults above 64 years old. It is well demonstrated that it dramatically improves speech understanding for the elderly

patients, similarly to the young implanted patients, but to a lesser extent for speech understanding in background noise conditions. *However the quality of life of the elderly implanted group increased similarly to that observed for the younger implanted group. Furthermore effects such as reduced isolation and incidence of depression were noted post-implant.*

The relationship between changes in cognitive function in profoundly deaf individuals and the restoration of hearing as a result of cochlear implantation is under evaluation, as well as the benefit of hearing rehabilitation in cases of dementia. The importance of combining speech therapy and cognitive training for the success and satisfaction of the patient post hearing implant is also still under assessment.

As a whole, the cost effectiveness of cochlear implantation in elderly still remains acceptable, even in consideration of the oldest group of patients currently treated above 80 and 90 years of age.

Attendees from 20 countries including invited specialists presenting from Belgium, Germany, Greece, France, Italy, Poland, Sweden, Switzerland and US met together to share their experience on Aging and Hearing to review and discuss topics ranging from basic research to rehabilitation of deafness in the elderly. This provided for constructive discussions around the works presented as well as proposals for much needed future works.

To date the effect of aging on hearing structures and hearing function, continues to be investigated through the use of animal models to help provide a better understanding of the physiological and overall needs of the aging human, the treatable targets and the potential for new drug therapies. Further investigations on hearing loss in the elderly should be completed to identify specific diseases

such as auditory neuropathy, on one hand, and cognitive alterations, on the other. Routine cognitive testing is being developed to guide the appropriate rehabilitation and predict the expected results from the implanted solutions currently available.

The positive outcomes following treatment with cochlear implantation in elderly patients were emphasized and did not bring to light additional relevant difficulties or concerns for treatment in this age group. Reports of performance after cochlear implantation in the implanted elderly population are similar across the countries, reinforcing its notable high-level of benefit for the quality of life for the treated individuals. We learnt from this two day symposium: how important it is to screen hearing in the elderly to help iden-

tify any hearing dysfunction needing attention as early as possible; the importance of a rounded assessment for CI-candidacy including the use of well adapted cognitive tests; consideration of associated co-morbidities to best determine rehabilitative needs; as well as the high level of achievable benefits from cochlear implantation in the elderly, especially for those offered rehabilitation before suffering afflictions such as isolation caused largely by their deafness. With the help of state-of-the-art technology, further research in animal models holds the future to designing new therapeutic approaches for improving treatments for the hearing-impaired elderly.

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