

REPORT ON WORLD CONGRESS OF AUDIOLOGY, BRISBANE, MAY 2014

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The 31st World Congress of Audiology (WCA) took place in Brisbane, Australia, from 3rd to 8th May 2014. The Congress is held every second year and gathers the authorities in the field of audiology from all over the world. WCA focuses on important issues and the challenges that audiology is facing with nowadays.

This year's Congress brought together about 800 participants, including 550 from Australia. Among them there were doctors, technicians, engineers, speech therapists, psychologists, and representatives of companies producing hearing implants and aids.

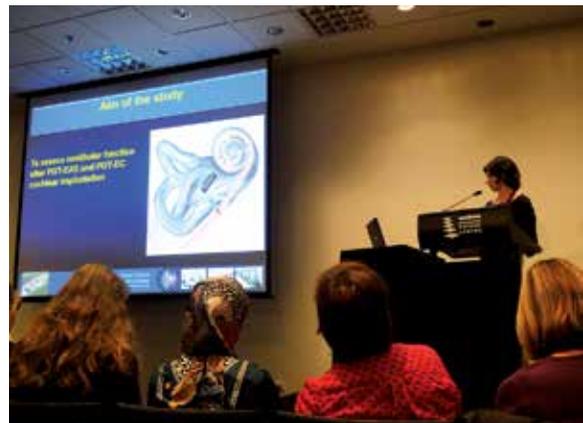
Over the course of numerous sessions in the Brisbane Convention and Exhibition Centre there were 502 oral reports, 131 posters, 3 round tables, 6 invited lectures, and a variety of training workshops.

The novelty of the Congress was a new form of presentation called 'oral poster', which is a compromise between an oral and a poster presentation. It is basically a 4-minute oral overview of a research topic which gives the audience a quick summary of the results with the possibility of their more detailed analysis on a poster.

At the round tables participants discussed the effect of omnipresent environmental noise on hearing, issues of cerebral plasticity and the future of audiology over the next 10–20 years.

The session on cerebral plasticity was conducted by Stephen Crain from Macquarie University, Kathleen Pichora-Fuller from the University of Toronto, and Kelly Tremblay from the University of Washington. The debate concerned, among other things, the use of magnetoencephalography (MEG) as one of the most sensitive methods for delving into the secrets of cerebral function. Cross-model plasticity is an interesting phenomenon that has emerged from many years of study. In patients deprived of one of their senses it has been observed that some areas of the brain reorganize in order to take on new functions. This cerebral plasticity is maintained for life, and these findings are especially relevant to audiology. Initial work with MEG has confirmed that, in people over 60 who use hearing aids, new synapses are produced what improves the benefits of such aids with time. Therefore it is recommended to judge the usefulness of a hearing prosthesis at least a few months after fitting a hearing aid.

A lot of attention was given to cognitive processes. Understanding speech involves two control mechanisms: bottom-up (the hearing organ transfers information to more



Magdalena Sosna during her presentation



Katarzyna Pietrasik during her presentation

central systems) and top-down (the central nervous system control what the listener expects, attends to and comprehends in the given communicative context). With aging the balance between these two mechanisms is distorted. In older patients changes occur in nerve networks responsible for hearing and for understanding speech so that they rely less on bottom-up control and more on top-down mechanism (contextual support). This chronic compensation can lead to brain network reorganization and is suspected to have its contribution in dementia development.

Discussions on the effect of 'noise consumption' in the modern world raised many interesting issues. The need for education as well as hearing protection was emphasised. It was noted that pure tone audiometry is not sensitive enough to detect at an early stage noise-induced hearing damage, which is related to the outer hair cells. Pierre Campo talked of the importance of using contralateral

acoustic stimulation in ipsilateral DPOAE measurements (CAS DPOAEs) as a method for detecting and monitoring the effects of early hearing damage. Sharon Kujawa from the Massachusetts Eye and Ear Infirmary outlined research which clearly showed that noise damage has long- and short-term consequences for inner ear physiology. Even if there is no damage to the hair cells and hearing thresholds return to normal, it is still possible that synapses connecting hair cells with hearing fibers can be damaged and fiber density can be reduced. This can lead to subtle disorders in inner ear processing (e.g. hyperacusis, tinnitus, and problems with understanding speech in noise). It can also increase the rate with which hearing declines with age.

The oral sessions covered a broad range of subjects: electrophysiology, cochlear implantation, rehabilitation, audiological diagnostics, pediatric audiology, unilateral hearing loss, hearing loss prevention, epidemiology, hearing disorders, hearing prostheses, BAHA systems, tinnitus, vertigo and new audiological techniques.

Griet Mertens from the University of Antwerp and Dayse Tavora Vieira from University of Western Australia gave a perspective on the advantages of cochlear implantation in patients with unilateral hearing loss. They reported results of the study on implanted patients with single sided deafness. Implantation resulted in a reduction of tinnitus, improvement in hearing in noise, and better sound localisation. In a related study, Isabelle Boisvert from Macquarie University presented the advantages of bilateral cochlear implantation in elderly population emphasizing better word recognition in this group of patients. Worth mentioning also are MEG studies of cerebral functioning in patients with tinnitus before and after Neuromonics treatment. Initial results confirm a positive correlation between changes detected in MEG maps and scores on the Tinnitus Reaction Questionnaire (TRQ).

To sum up, the 31st World Audiology Congress will be memorable for the variety of subjects, high level of discussion and good logistic organisation.

The Institute of Physiology and Pathology of Hearing will organize the WCA in 2020 in Warsaw.