

인공와우 이식술 자에서 Speech processing strategies에 따른 언어 판별능력

김희남* 심운주 김영명

연세대학교 이비인후과학교실

A COMPARISON OF SPEECH RECOGNITION ABILITY WITH DIFFERENT SPEECH PROCESSING STRATEGIES BY KOREAN COCHLEAR IMPLANTEES

Hee-Nam Kim, M.D., Yoon Joo Shim, Ph.D., Young Myoung Kim, M.D.

Yonsei University College Of Medicins

Introduction

The current evaluation Methods of the efficacy of the audiologic performance by cochlear implantees are to compare the patient's auditory function before and after implantation, or to compare overall performance levels of subjects implanted with different devices. By these evaluations, multi-channel speech processing strategies were superior at conveying the auditory information compared to single-channel cochlear implant designs. In addition, some of the observed variations of performance were related to duration of hearing loss, age at implantation, motivation and residual hearing.

Nevertheless, these methods are not able to completely eliminate the variables which affect the audiologic performance by cochlear implantees and, therefore, it is impossible to directly compare the auditory function efficacy with different speech processing strategies. This study was designed to eliminate the above variables and to compare the audiologic performances with two different speech processing strategies(F0/F1/F2/and multipeak in the same implanted ear.

Subjects and methods

Eight of 15 Korean implantees who received auditory rehabilitation for three months or more(range:three to 18 months)after implantation of a Nucleus 22-channel device were selected

A uniform test protocol was applied to the patients, and the battery of tests consisted of selected items from the Minimal Auditory Capabilities(MAC)test and tests developed by our own la-

boratory.

We tested word(monosyllable, spondee and trisyllable)recognition ability using Korean word lists for the speech audiometry, and the ability to discriminate Korean phonemes was also analyzed using two-syllable non-sense words.

All tests were presented to the implantees with the conditions of sound only, vision only and sound-plus-vision. The results were analyzed using SPSS/PC+ paired t-test.

Results

With the multipeak coding strategy, a remarkable difference in discriminating ability was found in the initial fricative consonant phonemes (/s/,/ss /, /h/). Therefore, the improvement of speech recognition ability with the multipeak coding strategy comes primarily from the better understanding of the initial fricative consonants.

In conclusion, our present results suggest that the continuing development of a speech processing strategy appropriate to the language of each nation is needed to enhance the auditory function efficacy by cochlear implantees, and our results also suggest that different speech coding strategies may be applied[†] to the cochlear implantees depending on their psychophysical responses to electrical stimuli.