NEW TYPE HEARING AID SYSTEM WITH FUNCTION OF SOUND SOURCE DIRECTION PRESENTATION

Aims: Development of new type hearing aid system. This system consists of ear-hook unit and drive unit. The main topic of this system is that the information of sound source direction only is presented to user by vibration. The information of direction is estimated from sound detected by microphone in the ear-hook unit. This device is suitable for the sensory unilateral deafness patients. In this report, we aim to develop the new shape ear-hook unit with compact, comfort and high performance.

Findings/Results/Outcomes: In this report, the compact ear-hook unit with ultra-small microphone and micro vibrator was made. From the results of comfort and performance evaluation, we could find the better shape and material for compact ear-hook unit.

Abstract (250 words)

The unilateral deafness patients lose their hearing ability of unilateral ear. The healthy subjects identify the direction of sound source by time and phase difference at their both ears. Therefore, the unilateral deafness patients can not identify the direction of sound source, and can not identify the person who speaks to them and the object that sounds an alarm. If the cause of hearing loss is conduction, the conventional hearing aids show the effectiveness. But, in case of the cause is sensory, these devices do not have enough effect. These patients need the information of sound source direction, the device that has the function of sound source direction presentation is desired.

In our previous report, we proposed the new-type hearing aid system with the function of the sound source direction presentation. This system consists of two parts: ear-hook unit with microphone and vibrator and drive unit with the function of the sound source direction estimation. Furthermore, it was confirmed that this system could present the sound source direction to the user.

In this report, we aimed to refine the ear-hook unit in the viewpoint of downsizing, comfort and performance. At first, new ear-hook unit was designed for ultra-small microphone and micro vibrator. After that, the prototype units with 3 kinds of shapes and 2 kinds of materials were made, and their comfortability ware evaluated. At last, the effect of the vibrator's noise to the microphone was evaluated. From the results of above-mentioned evaluation, the better dimension and material was determined.