Medical Devices

Audiometer with incorporated beating

A research group from the Andalusian Public Health System (SSPA) has developed a new audiometer based on the physical phenomenon of beating.

Oficina de TRANSFERENCIA DE TECNOLOGÍA
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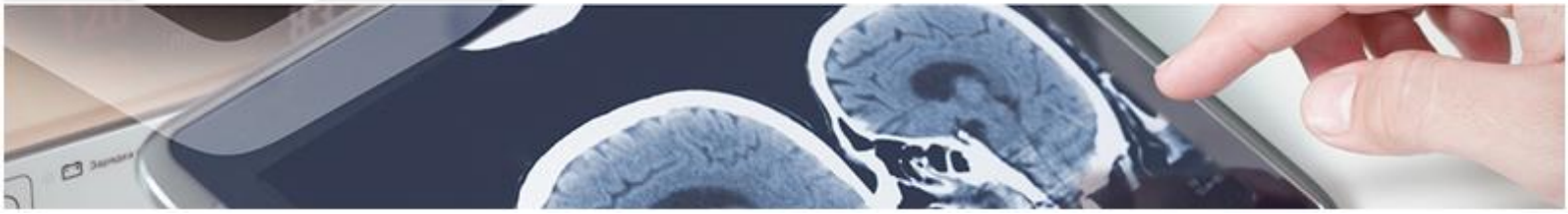

Description

There are three types of hearing loss: neurosensorial, transmissive or mixed. The first one is due to neuronal damage; the second to physical problems in the coming of sound to the inner ear (e.g. earwax); and the last one when both first and second type are combined.

It is very important to know the type involved, as the transmissive or mixed losses can be treated, but not sensorineural one. Audiometry is a basic test for any audiological study, so it is very common in hospitals, clinics, medical check-ups, etc. Basically, the goal is to determine how the patient hears individually by each ear, differentiating between air and bone conduction. When the patient hears via bone conduction and not via air conduction, the loss is transmissive. However, if you hear equally by both pathways, the loss is neurosensorial.

The problem is that via bone conduction sound is transmitted almost equally to both ears, therefore the patient will always hear by his "better" ear. The solution is to mask the sound reaching the ear which is not in study by applying a noise via air conduction. The downside of this is the need to set very well the intensity of the noise applied, being necessary multiple amendments and successive confirmations from the patient. All of this can lead to errors in diagnosis and lengthen the time of the test.

The proposed solution is an improvement of the current audiometers, so that allow the generation of continuous sounds and with similar frequencies simultaneously by air conduction (the headset) and bone conduction (the vibrator). This is achieved thanks to a novel method and based on paddling device: acoustic phenomenon which consists of the emission of a single tone with modulated intensity resulting from the sum of two sounds of similar intensity and slightly different tones.

Advantages

1. Thanks to this audiometer the not tested ear just will hear a single growing continuous sound.
2. Thanks to this method the runtime test is significantly reduced.
3. The implementation is much simpler, giving less diagnosis errors.
4. It also offers the possibility of detecting potential frauds in medical tasks.

Intellectual Property

This technology is protected by patent.

Aims

The research group is looking for a license or a collaboration agreement.

Classification

Area: Medical devices
Pathology: Other

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