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You may have heard the term binaural interference, but there is still a lot to unravel and discuss about this condition. Around 1939, Dr. Vern Knudsen, a renowned audiologist at the University of California, reported "inter-aural conflict", the term he gave to a mismatch between the ears so that patients hear better using only one ear than with two. Over the years, studies have been carried out in an attempt to prove Dr. Knudsen's theory, but the limited number of patients has failed to provide certainty.

The term "inter-aural conflict" has changed over the years. It was first reclassified as "hearing deprivation effect", but then a new term, binaural interference, was recommended by the renowned Dr James Jerger in 1993 and is currently considered the consensus. By the way, we recommend reading Jerger's book, "A Life in Audiology", which is an excellent tour through the history of Audiology intertwined with the story of his academic and professional life. The book includes an account of how Jerger assessed patients who complained of binaural interference and of the interventions he made. But to return to our topic, what is binaural interference?

Binaural interference most commonly occurs in patients who have a particular type of hearing disorder that means they need to use two different sound amplification devices. Some patients say they have a more comfortable hearing sensation, and improved communication, if they use a hearing aid in one ear only, even if they have hearing loss in both. Ideally, hearing works best if two ears are used, as theoretically this should allow for improved auditory processing – that is, better sound source localisation, better binaural integration and resolution, better figure/background discrimination, and better speech comprehension in environments with competing sources.

Trying to reestablish binaural hearing is a general goal in Audiology and is aimed for in individuals with bilateral hearing loss. Furthermore, failing to use a hearing aid can lead to a weakening of the auditory pathways and the neurons involved in sound perception.

Ultimately, hearing deprivation may, over the years, lead to a deterioration in auditory processing skills. However, Audiologists should be aware that about 17% of listeners, both those with normal hearing and those with hearing loss, experience binaural interference (see the 2017 study by Mussoi et al. in the Journal of the American Academy of Audiology).

This study highlights the need for special attention to be given to those patients who report discomfort with the use of separate hearing aids in both ears, in which case the preferred solution is to use one device only.
A number of studies conclude there are two consistent findings in cases of binaural interference: (a) it seems to be more common in elderly listeners when compared to young adults; and (b) the degree of hearing loss does not seem to be a major factor in the condition.

Is there an evaluation battery that can detect and monitor these patients? So far, there is consensus on some points, such as:

a) A basic audiological assessment (pure tone threshold audiometry and speech audiometry) is alone not capable of confirming the presence of binaural interference;

b) The analysis of ipsilateral and contralateral acoustic reflexes can provide some relevant data;

c) To indicate whether or not the individual has binaural interference, at least two tests that investigate speech perception need to be carried out;

d) The use of auditory processing tests that assess dichotic listening are essential, such as the dichotic digit test;

e) The use of tests involving noise is a recommended strategy, such as the Hearing in Noise Test (HINT);

f) It is recommended to assess the Masking Level Difference (MLD);

g) Electrophysiological tests can greatly benefit the diagnosis; they involve the use of Brainstem auditory evoked potential (BAEP); Middle latency auditory evoked potential (MLAEP); and Long latency auditory evoked potential (LLAEP).

Undoubtedly, there is still a lot to be discovered about binaural interference, although, as indicated above, some aspects are already defined and can help in the planning, handling, evaluation, and follow-up of patients who complain of binaural interference. Above all, a structured monitoring program for these patients should be considered, even if the complaint of discomfort is minimal. The evaluator's attention and care to the needs and demands of these patients will contribute to an improved amplification arrangement and, consequently, to better hearing.

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