Left and right reaction time differences to the sound intensity in normal and AD/HD children.

Baghdadi G, Towhidkhah F, Rostami R.


Abstract

OBJECTIVES:
The right hemisphere, which is attributed to the sound intensity discrimination, has an abnormality in people with attention deficit/hyperactivity disorder (AD/HD). However, it is not studied whether the defect in the right hemisphere has influenced on the intensity sensation of AD/HD subjects or not. In this study, the sensitivity of normal and AD/HD children to the sound intensity were investigated.

METHODS:
Nineteen normal and fourteen AD/HD children participated in the study and performed a simple auditory reaction time task. Using the regression analysis, the sensitivity of right and left ears to various sound intensity levels was examined.

RESULTS:
The statistical results showed that the sensitivity of AD/HD subjects to the intensity was lower than the normal group (p < 0.0001). Left and right pathways of the auditory system had the same pattern of response in AD/HD subjects (p > 0.05). However, in control group, the left pathway was more sensitive to the sound intensity level than the right one (p = 0.0156).

CONCLUSIONS:
It can be probable that the deficit of the right hemisphere has influenced on the auditory sensitivity of AD/HD children. The possible existent deficits of other auditory system components such as middle ear, inner ear, or involved brain stem nucleuses may also lead to the observed results. The development of new biomarkers based on the sensitivity of the brain hemispheres to the sound intensity has been suggested to estimate the risk of AD/HD. Designing new technique to correct the auditory feedback has been also proposed in behavioral treatment sessions.