A Study on Ear to Ear Lateralization of Auditory Image*

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In the present study, four experiments were conducted to see whether there exists any significant difference in shifting the fused auditory image from right ear to left ear and vice versa for right handers and left handers. 60 right handers and 10 left handers served as subjects in this study. The stimuli used in the first two experiments was pulsed tones (500 Hz to 4 KHz) and in the last two experiments, the stimuli used was CV (pa, ba, ka, ga, ta and da) syllables.

The stimuli was always presented dichotically at 20 dB SL. A fused auditory image was formed in right ear first, by increasing the intensity of the signal in right ear. This image was later shifted to left ear. The amount of intensity required to shift this fused image to left ear was found out. Similarly, a fused auditory image was formed in left ear first and then it was shifted to right ear. The amount of intensity required to shift the image from left ear to right ear was also obtained. The obtained results for right ear to left ear lateralization and left ear to right ear lateralization were compared. The data were analyzed separately for both right handers and left handers. Test–retest reliability was found by testing the subjects again, and a high reliability coefficient was obtained.

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Conclusions

Following are the conclusions of the present study :

(1) In right handers, there was no significant difference in the amount of intensity required to shift the fused auditory image of the pulsed tones (500 Hz and 1 KHz) from right ear to left ear and vice versa.

(2) In right handers, there was a significant difference in the amount of intensity required to shift the fused auditory image of the pulsed tones (2 KHz and 4 KHz) from right ear to left ear at high frequencies.

(3) In left handers, there was no significant difference in the amount of intensity required to shift the fused auditory image of the pulsed tones at all frequencies tested (500 Hz to 4 KHz).

(4) There was a significant difference in the amount of intensity required to shift the fused auditory image of CV syllables from right ear to left ear and vice versa, in right handers.

(5) No significant difference was found in the performance of right handers in shifting the auditory image from right ear to left ear and vice versa for both the non-verbal and verbal stimuli (pure tones and CV syllables).

(6) The findings of the present study suggest that there is involvement of cortex in lateralization task.

Suggestions for Further Research

(1) Intra-subject variability of the subjects at different frequencies could be studied.

(2) It would be worthwhile to extend the study on more number of strongly left handed persons.

(3) Feasibility of the present study as a diagnostic tool in identifying central auditory disorder and retrocochlear lesion cases should be explored.

(4) This study may be extended using music as the stimulus on singers and non-singers.

(5) Performance of stammerers on this study may be explored.