Posterior lateral superior temporal area

This study investigated the function and networks of the auditory cortex in the posterior lateral superior temporal area (PLST) using a combination of electrical cortical stimulation and diffusion tensor imaging (DTI).

Seven patients with intractable focal epilepsy in which the PLST auditory cortices were identified during the electrical cortical stimulation were enrolled in this study (left side: four patients, right side: three patients). Electrical stimulation at 50 Hz was applied to the chronically implanted subdural electrodes to identify the PLST auditory cortices. DTI was used to identify the subcortical fibers originating from the PLST auditory cortices found by electrical stimulation.

Electrical stimulation of the right PLST auditory cortices induced hearing impairment in three patients and left side stimulation elicited hearing illusory sounds in four patients. DTI detected the medial longitudinal fasciculus (MLF) in all patients, the superior longitudinal fasciculus (SLF) in six patients and the Inferior frontooccipital fascicle (IFOF) in three patients, originating from the PLST auditory cortices.

This study suggests different functional roles between the right and left PLST auditory cortices, and the networks originating from these areas [1)].

1)
Suzuki Y, Enatsu R, Kanno A, Ochi S, Mikuni N. The auditory cortex network in the posterior superior temporal area. Clin Neurophysiol. 2018 Aug 1;129(10):2132-2136. doi: 10.1016/j.clinph.2018.07.014. [Epub ahead of print] PubMed PMID: 30110660.