

APPENDIX

1. Characteristics of Patients with Auditory and Nonauditory Brain Lesions. KEYS: PPP, perceptual property processing score; APP, apperceptive processing; GIN, gaps-in-noise test.

Serial Number	Auditory (A)/ Non-auditory (NA)	Side of stroke (R = Right; L = Left; B = Bilateral)	Ischemic (I) /Haemorrhagic (H)	Dominant (D)/non-dominant (ND) stroke	Cortical (C)/Deep (D)	Site(s) of subacute auditory stroke lesion(s)	Sites of subacute non-auditory stroke lesion(s)	Old stroke lesion(s)	Average PTA in worse ear (dB HL)	APD tests with abnormal results
1	A	L	I	D	C	Heschl's, superior temporal, supramarginal and long insular gyri	None	None	40	GIN, PPP
2	A	R	I	D	C	Heschl's, superior temporal gyrus, supramarginal gyrus, angular gyrus, insula	Middle and inferior temporal gyri, post-central, subcentral, precentral gyri, inferior frontal gyri, right striatocapsular (partly haemorrhagic)	None	37.5	PPP, APP
3	A	L	I	D	C	Supramarginal and angular gyrus	None	None	27.5	GIN, PPP, APP, SP
4	A	L	H	D	D	Pons	Left cerebellar haemorrhage	None	55.83	GIN, PPP
5	A	L	I	D	C	Short insular gyri, middle frontal gyrus, pars triangularis and opercularis of inferior frontal gyrus	None	None	17.50	GIN, PPP, APP
6	A	L	I	D	C	Inferior parietal lobule, temporal operculum, posterior insula	None	None	13.33	PPP
7	A	L	I	D	C	Middle frontal gyrus	Left cingulate gyrus	None	4.17	None
8	A	L	I	ND	C	Supramarginal gyrus	Bilateral cerebellar hemispheric, right putamen	None	54.17	PPP
9	A	R	I	ND	C	Insular cortex	Right precentral gyrus, corona radiata and centrum semiovale	None	30.00	GIN, PPP

10	A	L	I	ND	D	Dorsolateral medulla	Left hippocampus, parahippocampal gyrus and fusiform gyrus	None	29.17	GIN
11	A	R	I	ND	D	Dorsolateral medulla	Right cerebellar hemisphere, Right dentate nucleus, Right precentral gyrus and Right posterior superior frontal gyrus	None	22.50	None
12	A	R	H	D	D	Ventral lateral medulla	None	None	18.33	GIN, PPP, APP
13	A	L	I	ND	C	Heschl's, Superior temporal, Planum temporale, supramarginal gyrus, insula, frontal - superior, middle and inferior, orbital gyri, gyrus rectus	Left globus pallidus, internal capsule - genu and posterior limb, left hippocampus	None	18.33	GIN, PPP, APP
14	A	R	I	ND	C	Superior temporal gyrus (inferior posterior cortex), supramarginal gyrus, angular gyrus	Right superior and middle occipital gyri	None	10.00	GIN, PPP, APP
15	A	R	I	ND	C	Inferior frontal gyrus, superior temporal gyrus, insula	Right putamen and caudate	None	8.33	None
16	A	L	I	D	C	Insula, Heschl's, Superior posterior temporal gyrus, Supramarginal gyrus	Right corona radiata	None	7.50	GIN, PPP
17	A	B	H	D	D	Central pons	None	None	4.17	None
18	A	R	I	ND	C	Superior frontal gyrus	Right middle cerebellar peduncle	None	40.00	GIN, PPP
19	A	L	I	D	D	Left hemipons	None	None	45.83	GIN, APP
20	A	R	I	D	C	Superior frontal gyrus	Right precentral gyrus	None	31.67	GIN, PPP, APP
21	A	L	H	D	C	Supramarginal gyrus, angular gyrus	Postcentral gyrus	None	27.50	GIN
22	A	R	I	ND	C	Supramarginal gyrus	Right precentral gyrus (hand knob), right postcentral gyrus	None	25.83	None

23	A	R	I	ND	C	Supramarginal gyrus, angular gyrus	Right precentral gyrus, post central gyrus, superior parietal lobule, right superior and middle occipital gyri	None	28.33	GIN, PPP
24	A	R	I	ND	C	Middle frontal gyrus	Right precuneus, right lingual gyrus	Ischemic infarct of right head of caudate, right thalamus	21.67	GIN
25	A	L	H	D	C	Supramarginal gyrus	Right cuneus of occipital lobe	None	19.17	None
26	A	L	I	D	C	Heschl's, supramarginal, long insular gyri	Left body of caudate and corona radiata	None	16.67	GIN, APP
27	A	L	I	D	D	Left pontine tegmentum	None	None	12.50	PPP, APP, SP
28	NA	L	I (H transformation)	D	-	-	Left head of caudate, anterior limb of internal capsule, lentiform nucleus, left posterior corona radiata	None	40	GIN
29	NA	R	I	D	-	-	Right pre central, post central and subcentral gyri	None	35	GIN
30	NA	R	I	ND	-	-	Ventromedial thalamus	Left cerebellar hemisphere ischemic infarct	22.5	GIN
31	NA	L	I	D	-	-	Left cuneus and lingual gyrus of occipital lobe	None	10	None
32	NA	R	I	ND	-	-	Right ventrolateral thalamus and posterior limb internal capsule	Right corona radiata and putamen lacunar infarct	25.8	None
33	NA	L	I	D	-	-	Left posterior caudate, putamen and corona radiata	None	6.67	None
34	NA	R	I	ND	-	-	Cingulate gyrus	Ischemic infarct of left lingual gyrus of occipital lobe	30.83	GIN, APP, SP
35	NA	R	H	D	-	-	Right lentiform nucleus	None	27.50	GIN, APP, PPP
36	NA	R	I	D	-	-	Right facial colliculus and/or medial longitudinal fasciculus		40.00	GIN, APP, PPP
37	NA	B	H	D	-	-	Bilateral caudate heads, lentiform and corona radiata	None	36.67	GIN, APP, SP

38	NA	R	I	D	-	-	Right anterior striatal (caudate + putamen)	None	26.67	APP
39	NA	R	I	ND	-	-	Right cuneus and lingual gyrus of occipital lobe, right parahippocampal gyrus, right fusiform gyrus, right splenium of corpus callosum, ventral lateral right thalamus	Ischemic stroke of right anterior head of caudate, anterior limb of internal capsule and anterior putamen (anterior striatocapsular)	20	GIN, PPP, APP, SP
40	NA	R	I	D	-	-	Posterior caudate, putamen and corona radiata			GIN, APP

2. Explanation of abnormal gaps-in-noise (GIN) test findings for patients with lesions in non-auditory areas

Patient	Lesion location	Explanation for abnormal GIN
28	Left head of caudate, anterior limb of internal capsule, lentiform nucleus, left posterior corona radiata	Involvement of the corona radiata disrupts white matter tracts connecting auditory regions, likely impairing temporal processing. Microvascular disease may also affect subcortical auditory pathways.
29	Right precentral, postcentral, and subcentral gyri	Primarily motor and sensory areas. Possible involvement of small vessel disease or disrupted multisensory integration could impair auditory temporal processing, though the exact reason for GIN abnormality remains uncertain.
30	Ventromedial thalamus (posterior circulation stroke)	The thalamus is involved in sensory relay, including auditory information. Disruption in thalamocortical networks may indirectly affect auditory temporal processing. Also, although the lesions may not be directly within classical auditory areas, they are located in nearby regions and share vascular circulations that support auditory pathways.
34	Left cuneus and lingual gyrus (posterior circulation stroke)	Primarily visual areas. Although the lesions may not be directly within classical auditory areas, they are located in nearby regions and share vascular circulations that support auditory pathways.
35	Right lentiform nucleus	The lentiform nucleus (basal ganglia) plays a role in timing and sequencing essential for auditory processing. Disruption here may impair temporal auditory processing. Small vessel disease may also contribute.
36	Right facial colliculus (pons) (posterior circulation stroke)	Posterior circulation stroke affecting brainstem auditory pathways. Although the lesions may not be directly within classical auditory areas, they are located in nearby regions and share vascular circulations that support auditory pathways.

37	Bilateral caudate heads, lentiform nucleus, and corona radiata	Lesions in the basal ganglia and corona radiata likely disrupt subcortical sensory integration pathways, impacting temporal processing. White matter tracts and small vessel disease may further contribute to the GIN abnormality.
39	Right cuneus, lingual gyrus, parahippocampal gyrus, fusiform gyrus, splenium of corpus callosum, ventral lateral thalamus (posterior circulation stroke)	Multiple areas involved, including the thalamus, which plays a role in sensory integration. Although the lesions may not be directly within classical auditory areas, they are located in nearby regions and share vascular circulations that support auditory pathways.