Abstract:

Apraxia is regularly associated with aphasia, but there is controversy whether their co-occurrence is the expression of a common basic deficit or results from anatomical proximity of their neural substrates. However, neither aphasia nor apraxia is an indivisible entity. Both diagnoses embrace diverse manifestations that may occur more or less independently from each other. Thus, the question whether apraxia is always accompanied by aphasia may lead to conflicting answers depending on which of their manifestations are considered. We used voxel based lesion symptom mapping (VLSM) for exploring communalities between lesion sites associated with aphasia and with apraxia. Linguistic impairment was assessed by the Aachen Aphasia Test (AAT) subtests naming, comprehension, repetition, written language, and Token Test. Apraxia was examined for imitation of meaningless hand and finger postures and for pantomime of tool use. There were two areas of overlap between aphasia and apraxia. Lesions in the anterior temporal lobe interfered with pantomime of tool use and with all linguistic tests. In the left inferior parietal lobe there was a large area where lesions were associated with defective imitation of hand postures and with poor scores on written language and the Token Test. Within this large area there were also two spots in supramarginal and angular gyrus where lesions were also associated with defective pantomime. We speculate that the coincidence of
language impairment and defective pantomime after anterior temporal lesions is due to impaired access to semantic memory. The combination of defective imitation of hand postures with poor scores on Token Test and written language is not easily compatible with a crucial role of parietal regions for the conversion of concepts of intended actions into motor commands. It accords better with a role of left inferior parietal lobe regions for the categorical perception of spatial relationships.