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- A total of 19 stroke survivors with touch impairment were investigated using fMRI and a touch discrimination paradigm 1-month poststroke; 11 had subcortical and 8 cortical sensory lesions; 12 age-matched healthy controls were also studied. Mean task-related contrast images were regressed with sensory impairment using random effects analysis for each subgroup and the total group.

- The findings provide novel evidence of neural correlates of poststroke touch impairment involving a distributed network of ipsilesional SI and SII, the contralesional thalamus, and frontal attention regions, particularly following subcortical lesions. Further systematic investigation of a modulatory role for ipsilesional SI, the thalamus, and frontal attention regions in sensory processing and recovery is warranted, particularly given implications for rehabilitation.
- The neural basis underlying somatosensory impairment and recovery poststroke is virtually unexplored.
- There was no significant difference in touch impairment between stroke subgroups. Touch discrimination of the affected hand correlated negatively with task-related activation in the ipsilesional primary somatosensory cortex (SI; adjacent to the SI hand area activated in healthy controls); ipsilesional secondary somatosensory cortex (SII); contralesional thalamus; and attention-related frontal and occipital regions in the subcortical group. In contrast, the cortical group did not show significant correlated activity. Yet there was no significant between-group difference in a priori somatosensory regions: only in the superior medial frontal gyrus. A negative correlation was observed in the contralesionalthalamus for the total group, irrespective of lesion type.
- To investigate the relationship between touch discrimination impairment and task-related brain activation in stroke survivors withsomatosensory impairment following subcortical or cortical lesions.