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Apraxia of speech associated with an infarct in the precentral gyrus of the insula

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Abstract It has been postulated that the precentral gyrus in the left insula is responsible for co-ordination of speech. We report a paitent with this disturbance who showed an acute infarct limited to this region.

Key words Speech, apraxia · Infarct, cerebral · Magnetic resonance imaging

Introduction

Identification of regions which coordinate speech articulation is important, because speech is the most fundamental means of communication and its complexity separates humans from other species [1]. Although the left opercular region has been identified as coordinating articulation of speech [2], the precise regions remain unclear. Dronkers [3] reported that the region responsible is the left precentral gyrus of the insula, using the overlay technique with images from 25 patients with a stroke and in co-ordination of speech articulation (or speech apraxia) and 19 patients without such deficits. However, it is not known whether a lesion restricted to this small gyrus impairs co-ordination of speech articulation. We saw a patient with speech apraxia and a cerebral infarct restricted to the left precentral gyrus of the insula.

Case report

A 67-year-old woman with diabetes mellitus developed sudden disturbance of speech. She was admitted to hospital 4 h after the onset. Her blood pressure was 160/106 mm Hg, and serum glucose was 130 mg/dl. She was alert but aphonic, showing oral and lingual apraxia, but no weakness of muscles involved in articulation of speech. She had showed intact writing skills and neurologically was otherwise normal. Antithrombin therapy was started at once. During the first 12 h of her admission, the oral and lingual apraxia diminished, and she could speak. However, she showed difficulty in initiating utterances and inconsistency in repeated production of the same ones. She could perceive and recognise speech sounds, including her own errors of articulation. Within 48 h, she recovered fully. Fluid attenuated inversion recovery (FLAIR), T2- and diffusion-weighted MRI showed a small high-signal area in the precentral gyrus of the insula (Fig. 1), diagnosed as a small infarct.

Discussion

This case clearly shows that the left precentral gyrus of the insula coordinates articulation of speech. However, oral apraxia accompanied speech apraxia in our case,

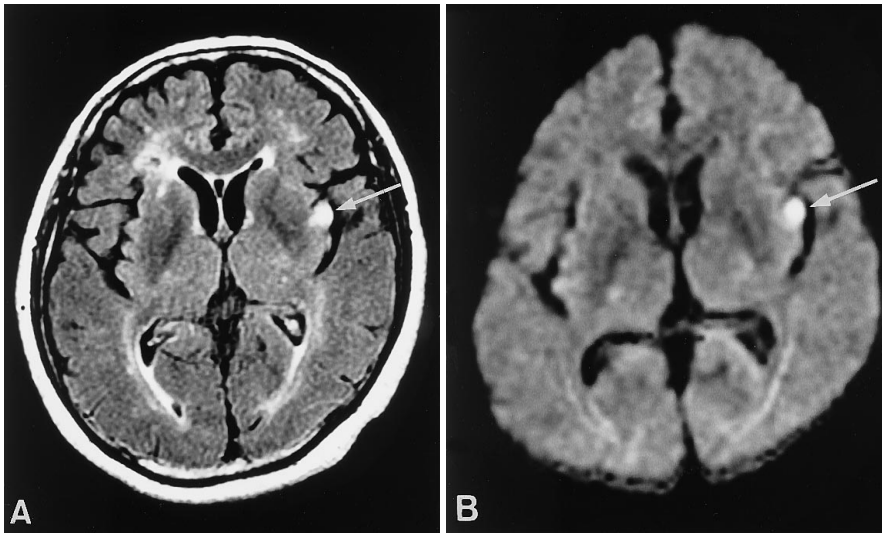

Fig. 1 FLAIR **A** and diffusion-weighted **B** axial MRI show high signal *(arrows)* restricted to the left precentral gyrus of the insula

and the relationship speech and oral apraxias is controversial. Oral apraxia has been thought to be related to lesions in the left frontal, central opercular and anterior insular regions [1]. Dronkers [3] reported oral apraxia in 48 % of patients with apraxia of speech. Coexistence of oral and speech apraxias in our case suggests that regions coordinating speech articulation and orofacial movement are adjacent or overlap. It remains unproven whether the region identified is the only one coordinating speech articulation.

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