Development of speech and articulation and their disruption due to genetic modification and neurological injury.

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Abstract

The identification of the first gene involved in a speech-language disorder was made possible through the study of a British multi-generational family (the "KE family") in whom half the members have an inherited speech-language disorder caused by a FOXP2 mutation. I will review neuroimaging investigations in the affected members of the KE family which have revealed structural and functional abnormalities in a wide cortical-subcortical network. Functional imaging studies have confirmed dysfunction of this network by revealing abnormal activation in several areas including Broca's area and the putamen during language-related tasks, such as word repetition and generation. In the second part of my talk I will review evidence on the normal development of functional and structural maturation of neural systems underlying speech production and will show examples how acute neurological injury can disrupt these processes.

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