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fMRI study in human brain during chewing

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The mastication is a rhythmic motor act involving peripheral effector organs and sensory inputs and it is attended by intense activity of brain stem. The prefrontal cortex has long been suspected to play an important role during mastication, in the ability to orchestrate thought and action in accordance with internal goals. Its neural basis, however, has remained a mystery (Ono Y. et al. 2010). We selected a sample of 10 healthy right-handed subjects who underwent fMRI during mastication as forced as free with soft and hard bolus. Results showed, during free mastication with hard or soft bole, in "left" cerebral cortex the activation of the primary (area 4) supplementary (area 6) motor areas and somesthesic primary area (area 3), with maximum activation during hard bole. At same time, in forced mastication, besides the previous areas, are activated also, in "right" cerebral cortex, area 10 and 11 and omolateral neostriatum. In conclusion, in the light of recent studies, we observed the significant role of basal ganglia in planning and execution of motor gesture process.

Reference

[1] Ono Y, Yamamoto T, Kubo KY, Onozuka M, J Oral Rehabil. 2010.

Key words
fMRI, chewing, basal ganglia.