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C0173 - DETERMINATION OF ELOQUENT FUNCTIONAL AREAS COMPARING TASK BOLD FMRI AND ANATOMY OF BRAIN SULCUS, GYRUS AND WHITE MATTER TRACTS: A RELIABLE TOOL FOR PRESURGICAL PLANNING OF PATIENTS WITH LESIONS ON THOSE AREAS?

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Resumen

Objectives: To compare the anatomical knowledge of brain sulcus, gyrus and white matter tracts with the results obtained by the fMRI and their reliability for planning patients with lesions on eloquent areas.

Methods: 88 hemispheres in 44 patients with lesions on eloquent areas were studied by obtaining fMRI results defining motor areas (foot, hand and face) and speech areas. These results were compared presurgically with anatomical references on T1, T2, FLAIR and DTI sequences. The cortical stimulation, which is considered the gold standard, was used to verify intraoperatively the motor anatomical references and the fMRI results.

Results: We found a mismatching of 7 ± 3 mm comparing the preoperative anatomical references (T1, T2, FLAIR, DTI) with the fMRI results on motor areas. On the speech regions we had a discrepancy of 5 ± 2 mm. Intraoperatively we could delimitate the motor area with cortical stimulation and we saw that there was more surface outside within the fMRI than within the anatomical references. We also found that in many cases the anatomical regions delimited by fMRI were slightly different compared with anatomical findings.

Conclusions: While dealing with brain pathology the anatomy may be distorted, shifted and unclear. Functional MRI should not be the only study to determine an eloquent area because in many cases we found a mismatching defining the anatomical region and also the surface extension in relation to anatomy knowledge and cortical stimulation.