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fMRI 结合术中皮层电刺激在语言区附近肿瘤切除中的临床研究

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Effectiveness of Functional Magnetic Resonance Imaging Combined with Electrical Cortical Stimulation under Awake Craniotomy for Lesions Involving the Eloquent Language Area of the Brain

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摘要 探讨功能磁共振 (functional magnetic resonance imaging, fMRI) 联合术中直接皮层电刺激 (electrical cortical stimulation, ECS) 技术在定位患者语言功能区中的作用及其临床应用价值。方法: 术前利用fMRI技术, 定位Broca或Wernicke区, 术中唤醒麻醉下采用ECS定位语言功能区, 与术前fMRI定位结果对比, 语言功能区保护下显微切除肿瘤。结果: 10例语言功能区附近肿瘤的患者中, 在术中唤醒麻醉下采用ECS定位语言功能区成功8例, 与术前fMRI结果对比, 6例为重叠, 2例为邻近关系。结论: fMRI可以作为语言功能区附近肿瘤术前无创性、个体化定位的一种有效方法, fMRI与术中ECS的联合应用能够实现可视化保护语言功能的同时最大化地切除肿瘤组织, 从而提高了患者的术后生活质量, 具有良好的临床应用价值。

关键词: 功能磁共振 语言功能区 术中唤醒 皮层电刺激

Abstract: To evaluate the effectiveness of functional magnetic resonance imaging (fMRI) and electrical cortical stimulation (ECS) under awake craniotomy in localizing the functional areas of language of a patient. Methods: Oxygen-dependent fMRI technology was used to activate Broca's and Wernicke's areas. ECS was used to localize the language areas under awake craniotomy. The results were compared with those of preoperative localization and microscopic removal of the lesions under protection of the language areas. Results: Among 10 patients with lesions involving the language areas of the brain, successful localization of the functional areas of language using ECS under awake craniotomy was observed in 8 patients. A comparison of the intra-operative localization of the language area with the preoperative results of fMRI revealed overlapping in 6 cases and neighborhood in 2. Conclusion: fMRI can be used as a non-invasive, precise, and effective method for localizing the language areas and assessing the dominant hemisphere. fMRI and ECS under awake craniotomy can improve tumor excision as well as the quality of life of a patient, and has good clinical application value.

Key words: Functional magnetic resonance imaging Language areas Awake craniotomy Electrical cortical stimulation

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