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Urgent brain tumor resection surgery: when to do?

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Background: Brain tumors can present to the emergency department for many causes. It is unusual for those patients to need emergency tumor resection surgery. One of the exceptions is patients with markedly increased ICP secondary to the tumor mass.

Objective: To define an international guideline for the indications of urgent surgical resection of brain tumors according to inclusion criteria.

Methods: A prospective analysis for twenty patients who undergone urgent brain tumor resection surgery at Neurosurgery Teaching Hospital –Baghdad-Iraq was conducted from October 2014 to February 2016. The variables assessed for each case is gender, age, GCS score (pre and post-op.), functional deficit (pre and post-op.), Brain CT-scan criteria for each tumor, medical therapy trial in hours and the histopathological data.

Results: Analysis for the 20 urgently operated cases is done. According to this analysis the female gender is 55%, the mean age is 43 year (SD 16.056), the mean pre-op GCS score is 9, 19 brain tumors is supratentorial and 1 brain tumor is infratentorial, For supratentorial tumors 11 tumors is in the right hemisphere, the tumors are 55% intra-axial, 45% extra-axial, the lobes affected are temporal (11 patient) then parietal (5 patient), others (3 patients), hemorrhagic tumor is found in 20%, the minimum midline shift in brain CT scan is 1 cm (mean 1.79 cm), the mean tumor size is 5.5 cm in maximum diameter, medical therapy is tried for a minimum of 2 hours (mean 3.50 hours), the histopathological data as follows meningioma (9 patients), glioma (6 patients 4 of those are glioblastoma multiforme), metastasis (5 patients), post-op GCS score is 15 (except 1 case GCS score 14), the paired test for pre and post-op GCS score shows strongly significant improvement (P value > 0.01),), the paired test for pre and post-op functional deterioration shows strongly significant improvement (P value > 0.01).

Conclusion: From the study result we suggest the following inclusion criteria as indication guideline for urgent brain tumor resection surgery. The selected patient for surgery must fulfill all the following criteria: (1) Acute neurological deterioration [life-threatening decrease in GCS or functional deterioration (motor or visual function)]. (2) Significant midline shift in Brain CT-scan (< 1cm). (3) The response to medical therapy trial to decrease ICP is either unexpected or failed. (4) The tumor mass is the main cause of deterioration: (A) Strong indication: tumor size maximum diameter > 4 cm or tumors that involve or compress the temporal lobe. (B) Relative Indication: hemorrhagic tumors.

Abbreviations: GCS= Glascow Coma scale, CT=Computerized Tomography.

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