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Neuroradiological assessment of newly diagnosed glioblastoma

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Recommendations

Level I:

- Whenever possible, it is recommended that magnetic resonance imaging with the addition of gadolinium contrast enhancement be used because it provides information that may allow differentiation of glioblastoma from other intrinsic tumors and secondary tumors.

Level II:

- Computerized tomography with the addition of contrast material may provide data allowing differentiation of glioblastoma from other intrinsic tumors and secondary tumors.

Level III:

- The addition of proton magnetic resonance spectroscopy to standard anatomic magnetic resonance imaging provides details that may improve diagnostic accuracy for lesions of the brain, including brain tumors.
- Utilization of perfusion magnetic resonance imaging with determination of mean regional blood volume may provide data that assists in separating the histologic characteristics of intrinsic tumors from one another.

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Rationale

Accurate imaging diagnosis of glioblastoma as soon as is reasonable facilitates proper preparation for biopsy or surgical intervention, choice of radiation parameters, chemotherapeutic agents and other treatment modalities. This guideline was developed with the goal of being able to state the optimal method of imaging the lesions of patients suspected to have a newly diagnosed glioblastoma.

Search criteria

The MEDLINE database (National Library of Medicine) was searched using the Ovid (New York, NY) interface for the initial time period between 1966 and the first week of July, 2005. The general search strategy consisted of defining a basis set that was the result of the intersection (Boolean "and") of datasets resulting from independent searches for brain tumors and brain tumor imaging. In addition, Ovid has a utility that can automatically limit a dataset to those involving brain tumor imaging. The initial basis set resulted from the sum of the searches performed in both ways. Subsequently, undesired classes of articles were systematically excluded from the initial basis set to develop the final working set. As the premise for this work was to evaluate initial presentation of primary brain tumors, especially glioblastoma, articles referring to tumor recurrence or metastasis were excluded. The second premise was to evaluate these lesions in adults.