Diagnostic value of post-therapy brain SPECT/CT with pentavalent 99mTc-DMSA in patients with glioblastoma multiform: preliminary report

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Abstract:

Aim: To evaluate the feasibility of performing 99mTc- DMSA (V) brain SPECT/CT in patients with glioblastoma multiform after their definitive therapy. Patients and Methods: Patients with documented grade IV glioma were prospectively recruited for this study. Tc-99m DMSA (V) brain SPECT/CT imaging was acquired after a mean interval of 76±46 days from therapy, 2-3 h. after i.v. injection of 555-740 MBq of the tracer. Scans were interpreted visually as positive or negative by three nuclear medicine physicians. Agreement between two or more physicians was considered a consensus decision. The consensus results of DMSA (V) SPECT/CT were compared against the reference standard which was based on subsequent clinical/neuroimaging follow up or pathology whenever re-surgery is performed. Lesion quantitation was performed by one nuclear medicine physician by drawing a region of interest (ROI) on the Lesion site (L) and a mirror ROI on the contra-lateral normal brain tissue (NL) then L/NL ratio was calculated. Results: A total of 20 patients were enrolled in this study. According to the reference standard, recurrence was detected in 10 patients while 10 were disease free. Inter-reader kappa agreement ranged from 0.65 to 0.90. Consensus reading of DMSA (V) SPECT/CT correctly detected recurrence in 8/10 (sensitivity 80%) and correctly ruled out disease in 9/10 (specificity 90%). L/NL ratio for positive and negative cases were 6.6±8 and 1.3±1.1 respectively (p

Keywords:

99mTc-DMSA (V), brain SPECT/CT, Glioblastoma multiform.

Published In:

JCMRp, NULL, NULL