Technetium-99m pentavalent dimercaptosuccinic acid (99mTc DMSA-V) brain SPECT/CT and Karnofsky performance score predict survival in patients with glioma

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Abstract:

Objectives: To evaluate the prognostic role of post-therapy 99mTc-DMSA-V brain SPECT/CT scans in patients with glioma. Methods: Patients with glioma underwent post-treatment SPECT/CT scanning using 99mTc-DMSA-V in this prospective study. Scan results were reported as positive or negative for tumor residual/recurrence. Three-year overall survival (OS) was calculated from the date of diagnosis to the date of death or last follow-up. Results: A total of 37 patients were eligible for analysis with mean survival of 37.5 months (range = 28.6 – 46.5). At the end of follow-up, 13 patients died (3-year OS = 42%). Ten out of 17 patients with positive DMSA-V scan findings died compared to 3 out of 20 patients with negative scans. Three-year OS were 13% for the positive group with mean survival of 22.2 months compared to 74% and mean survival of 50.3 months for the negative group (P = 0.003). Additionally, patients with negative scans survived significantly longer than positive group after their date of scanning (mean survival 20.7 months vs. 11.0 months; P = 0.001). DMSA-V scan results were still significant predictor of OS after adjusting for age, gender and pathology in Cox proportional hazard model (P = 0.03; Hazards ratio [HR] = 4.8 [95% CI = 1.2 – 19.7]). However, DMSA-V scan results were strongly associated with Karnofsky performance scale (KPS) (P = 0.002). A scoring system which includes both DMSA-V scan results and KPS (cut-off 80) identified 3 different groups with significant difference in OS; score 0 = negative scan & KPS < 80 (reference group), score 1 = positive scan or KPS ≥ 80

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