Over-expression of S100B protein as a serum marker of brain metastasis in non-small cell lung cancer and its prognostic value

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Background: Validated serum biomarkers for patients suffering from non-small cell lung cancer (NSCLC) brain metastasis are urgently needed for early diagnosis, treatment monitoring, and prognostic classification in daily clinical practice and trials. Serum S100B was reported to be a marker of leaky blood-brain barrier (BBB), which was often caused by brain tumors. This study aimed to investigate the role of S100B and S100B antibody in the early detection of NSCLC brain metastasis and the prognostic significance.

Methods: 100 patients with NSCLC brain metastasis, 50 patients of stage IV NSCLC without brain metastasis, and 50 patients with cerebrovascular diseases were enrolled in this prospective study. S100B and S100B antibody were measured in serum samples of all patients before and after treatment by ELISA, and the correlations with brain metastasis were assessed by ANOVA. Kaplan-Meier survival analyses and COX regression were used to unveil the prognosis significance.

Results: The results showed that serum S100B correlated significantly with NSCLC brain metastasis (p < 0.001), but not S100B antibody (p > 0.05). When evaluated by the ROC curve, at the cutoff point 13.83 pg/ml, the sensitivity and specificity were 94% and 93%, respectively (AUC = 0.938, p < 0.001). The PFS and OS of NSCLC patients with brain metastasis were significantly shorter in the patients with high levels of serum S100B. In addition, S100B was an independent prognostic factor.

Conclusions: In conclusion, serum S100B was a sensitive and specific marker for early detection of brain metastasis in NSCLC and could be used as a surveillance tool for prognosis evaluation.

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