Outcome of Brain Metastases in Non-Small Cell Lung Cancer (NSCLC); Egyptian Experience Update

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Abstract

Purpose: Lung cancer remains the leading cause of cancer mortality in both women and men. It is also the most common primary tumor responsible for brain metastases making up to approximately 40% to 50% of cases. In general brain metastases is associated with poor prognosis and despite major advances in cancer diagnosis and treatment, the overall survival time of these patients has remained at 3 to 6 months since the 1950s. The aim of this study is to analyze the risk factors and treatment outcome of patients with NSCLC who developed brain metastases; and to identify which subgroup of these patients is associated with better survival outcome.

Methods: The analyzed group included all patients with NSCLC presented to Kasralainy Center of Clinical Oncology and Nuclear Medicine (NEMROCK) during the period between January 2006 and December 2012. Seven hundred and fourteen patients were found, of which one hundred and thirty two patients had clinical evidence of brain metastases either initially at presentation or at any time during their follow up. The analyzed data included clinico-epidemiological factors, treatment and survival outcomes.

Results: The median time to development of brain metastases (TTBM) in the whole group was 6 months. Factors that were associated with longer TTBM were good PS (1-2) at time of initial diagnosis (P=0.004), early stages at presentation (stage 1&2) (P<0.0001) and the use of chemotherapy for treatment of NSCLC (P<0.0001). But only early stages (1&2) at presentation was significant in multivariate analysis (P=0.001). Median PFS and OS were 4.5 months and 5 months respectively. Factors associated with longer OS were; Good PS (1&2) at development of brain metastases (P<0.0001), Controlled lung primary (P<0.0001), absence of extracranial metastases (P=0.019), the use of chemotherapy after development of brain metastases (P<0.0001) and whole brain irradiation (P=0.001). While only controlled lung primary and the administration of chemotherapy after development of brain metastases were independent prognostic factors affecting OS with P-values of 0.006 and 0.02 respectively.

Conclusion: Patients with stage 1&2 NSCLC had significantly longer time to develop brain metastases than those with stage 3&4. After development of brain metastases; patients with Good PS(1-2), no extracranial metastases and controlled lung primary have significantly longer OS. Treatment with chemotherapy prolongs OS in this group of patients.

Key words: NSCLC, brain metastases, retrospective study.