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### **Extracranial metastatic patterns on occurrence of brain metastases.**

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#### **Abstract**

Extracranial metastases and their frequency by sites have been described as prognostic factors for survival of patients with brain metastasis. However, these factors must be identified and described in more detail for a large series of patients. Using routine data from the largest German health insurance fund, 5,074 patients with brain metastasis who were diagnosed and treated in 2008 were analyzed to identify the frequency and distribution of extracranial metastatic sites concurrent with brain metastasis in relation to age, gender, and tumor type. Brain metastases were observed in males more frequently than in females (56.4 and 43.6% respectively  $P < 0.001$ ), and were most often from lung (51.2%), breast (12.3%), and unknown (7.5%) primaries. Extracranial metastatic sites were observed in 58.8% of patients; the number of sites was from 1 to 7, with a mean of 1.11. For the 16 most common primary sites the range was from 0.13 to 1.91. In 11 of these 16 sites, lungs were the most common concurrent metastatic site. Lung cancer, breast cancer, non-Hodgkin's lymphoma, and testicular cancer most commonly metastasized to bone, and bladder cancer to kidneys. Different primary tumors have different frequencies and patterns of extracranial metastatic sites concurrently with brain metastasis. The lung is the most common metastatic site of most primary tumors, bone for a few tumors, and kidneys for bladder cancer. For the unknown primary tumor type, screening for these most common metastatic sites must be intensified, in particular when molecular assessment is not available.

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