

The Utility of Whole-Body CT Screening for Solitary Brain Lesions

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Introduction

Solitary brain tumors can propose a diagnostic dilemma due to the difficulty of differentiating between primary brain tumor and metastatic disease. Similar radiologic appearance on routine magnetic resonance imaging (MRI) necessitates the need of additional noninvasive methods of differentiation. The aim of this study is to determine the clinical utility of pre-operative Computed Tomography of the Chest/Abdomen/Pelvis (CT CAP) in detecting metastatic disease in patients with solitary brain tumors.

Methods

Our prospectively-maintained surgical database was reviewed for all patients undergoing craniotomy for a new diagnosis of brain tumor from 2011-2016. Patients were excluded if they had multiple brain tumors, underwent prior craniotomy for tumor, or if they harbored a history of cancer. 143 patients met inclusion criteria including a pre-operative CT CAP and a pathological diagnosis from resection or biopsy. All patients underwent pre-operative CT CAP as part of their work-up to evaluate for metastatic disease.

Results

Pre-operative CT CAP has a sensitivity of 0.90 and specificity of 0.94 for the detection of metastases. Malignancy discovered on pre-operative CT CAP can predict brain pathology with a positive predictive value of 0.88 and a negative predictive value of 0.95.

Conclusions

Pre-operative full body CT has clinical utility in aiding in the establishment of a differential diagnosis of primary brain tumor versus a solitary metastatic lesion. This non-invasive screening test has value when discussing with patients, pre-operatively, the benefits of craniotomy for biopsy or resection.

Learning Objectives

- 1) Describe the importance of using preoperative whole-body CT to characterize solitary brain lesions as either primary or metastatic
- 2) Discuss the clinical utility of CT CAP in differentiating primary versus metastatic brain lesions compared to other radiologic techniques
- 3) Identify an effective treatment based on preoperative CT CAP findings of primary versus metastatic disease