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Efficacy of Stereotactic biopsy and Associated Mortality

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Introduction

Stereotactic biopsy (with or without frame guidance) is a mainstay of neuro-oncology practice, allowing for histological diagnosis to be made for those tumours whose anatomy precludes aggressive debulking, or those patients whose physiology may not warrant a more aggressive procedure. Our standard practice is to perform frameless stereotactic biopsy with intraoperative smears reported on site.

Previous reports suggest a non diagnostic rate of 5-6% from all biopsies with a low (1%) procedural risk of mortality.

We undertook a retrospective review to review the mortality and efficacy of our approach.

Methods

465 consecutive stereotactic biopsies were examined from the period 2006-2011 as part of a retrospective chart review.

Results

238 Glioblastomas, 93 other astrocytomas, 62 Lymphomas, 15 metastases, 17 oligodendrogliomas and 27 assorted other pathologies were diagnosed. In thirteen patients we were unable to reach a definitive diagnosis.

Of the thirteen patients without histological diagnosis, all were re-discussed in the neuro-oncology MDT. Two patients underwent further biopsies which were diagnostic. One died prior to undergoing a second biopsy. The remaining patients were either treated based on the radiological presumption of high grade glioma, or were monitored with serial imaging and observation with a view to repeating a biopsy should any change be observed.

7 day mortality was 6/465 (1.2%), rising to 9.5% at 30 days. 30 day mortality was greatly increased in those patients with GBM (13%) and Lymphoma (14.5%) as opposed to any other diagnosis (2.4%).

Conclusions

We noted a 3% non-diagnostic rate for our biopsies, which is lower than previously published reports. Mortality, particularly at 30 days was surprisingly high, but the marked skew towards patients with Glioblastoma and Lymphoma reflects the nature of the disease and the patient population. Our practice has historically been to restrict biopsy to those patients with significant comorbidity or deeply seated disease where craniotomy and debulk may cause major morbidity, and this would be supported by the high mortality in this population.

The mortality of 1.2% at seven days is probably a more accurate reflection of the procedural risk, and it is worth noting that all six patients who died within seven days of the procedure had histology consistent with high grade glioma. These are generally vascular tumours, and biopsy carries a risk of post operative haematoma, which has been, without exception, the cause of all immediate post operative mortality in our series. We look forwards to completed our review with the remaining data and comparing it to our craniotomy outcomes. In the meantime, this will serve as a useful baseline to better inform our patient population of some of the risks involved in biopsy.

Learning Objectives

Participants will be able to quantify the risks involved in stereotactice biopsy, and use this information to appropriately counsel patients.

References

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