Factors affecting diagnostic yield in needle biopsy for brain lesions.

Department of Neurosurgery, Royal Victoria Infirmary, Newcastle Upon Tyne, UK. Georgios.Tsermoulas@nhs.net

Abstract

INTRODUCTION: We analyse the factors that are associated with the diagnostic yield of needle brain biopsy.

MATERIAL AND METHODS: We present a retrospective series of 124 consecutive biopsies in a 30-month period. Patients’ demographics (age, gender), lesion topography (side, location, depth), lesion characteristics (histology, volume, radiological enhancement), type of biopsy procedure (freehand, ultrasound guided, frameless and frame-based stereotactic) and the use of intraoperative histologic examination were correlated with the diagnostic rate. Descriptive statistics and a nominal logistic regression model were used to evaluate the factors influencing diagnostic yield.

RESULTS: 63 men and 61 women were included in the study with mean age 59.2 (range: 16-86). 55 were frame-based stereotactic biopsies, 33 were frameless stereotactic biopsies, 29 biopsies were performed under ultrasound guidance and 7 freehand. The diagnostic yield in our series is 93.5%. The gender, lesion topography, biopsy method, use of intraoperative histology and enhancement did not correlate with the diagnostic yield. Younger age had a negative impact on diagnostic yield. 6 out of 8 inconclusive biopsies were in non-glial lesions (p < 0.05). The odds of obtaining a positive diagnosis increased sevenfold with every cc increase in lesion volume.

CONCLUSION: The age of the patient, the volume and the histology of the brain lesion had an impact on the diagnostic yield of needle biopsy. None of the other factors significantly influenced the diagnostic rate.

PMID: 22984980 [PubMed - indexed for MEDLINE]