Stereotactic biopsies of brainstem lesions were first described in 1978 in adults and were performed frequently during the 1980s in both adult and pediatric patients, with a number of reports documenting a relatively high diagnostic yield, as well as a low complication rate ^{1) 2) 3) 4) 5) 6)}

Biopsies of brainstem lesions are performed to establish a diagnosis in the setting of an atypical clinical or radiological presentation, or to facilitate molecular studies. A better understanding of the safety and diagnostic yield of brainstem biopsies would help guide appropriate patient selection

Labuschagne et al. reported on a novel intra-operative stimulating (IOS) probe that is integrated into a commercially available stereotactic biopsy needle with the rationale that stimulation of the intended biopsy site should predict functional tissue thus preventing inadvertent biopsy of eloquent tissue.

Patients undergoing brainstem biopsies for atypical lesions were offered the additional stimulation procedure. The IOS probe was used to deliver stimulation in an attempt to determine the proximity of eloquent tissue. Once the desired location of the biopsy needle was achieved, the IOS probe was inserted down the center of the biopsy needle and the stimulus applied. If no action potential was recorded, biopsies from four quadrants of the lesion were taken. If however a compound action potential was recorded, a new target was selected.

Results: Nine patients had the biopsy and stimulation procedure performed. The median age was 36 months. A minimum of 8 samples was obtained from each patient. Biopsy material was adequate to obtain a diagnosis in all 9 patients. In 2 cases use of the device influenced the insertion trajectory or biopsy site. No patients experienced any complications directly attributable to either the biopsy procedure or application of the stimulation.

Use of the IOS probe for intraoperative stimulation of the intended brainstem biopsy site was found to be safe and feasible. The addition of stimulation using the IOS probe can be done with minimal change in workflow ⁷⁾.

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Coffey RJ, Lunsford LD. Diagnosis and treatment of brainstem mass lesions by CT-guided stereotactic surgery. Appl Neurophysiol. 1985;48(1-6):467-471.

Coffey RJ, Lunsford LD. Stereotactic surgery for mass lesions of the midbrain and pons. Neurosurgery. 1985;17(1):12–18.

Franzini A, Allegranza A, Melcarne A, Serial stereotactic biopsy of brain stem expanding lesions. Considerations on 45 consecutive cases. Acta Neurochir Suppl (Wien). 1988;42:170–176.

Giunta F, Grasso G, Marini G, Zorzi F. Brain stem expanding lesions: stereotactic diagnosis and therapeutical approach. Acta Neurochir Suppl (Wien). 1989;46:86–89.

Gleason CA, Wise BL, Feinstein B. Stereotactic localization (with computerized tomographic scanning), biopsy, and radiofrequency treatment of deep brain lesions. Neurosurgery. 1978;2(3):217–222.

Kratimenos GP, Nouby RM, Bradford R, Image directed stereotactic surgery for brain stem lesions. Acta Neurochir (Wien). 1992;116(2-4):164–170.

Labuschagne J, Mutyaba D, Nel J, Casieri C. Use of intra-operative stimulation of brainstem lesion target sites for frameless stereotactic biopsies. Childs Nerv Syst. 2021 Mar 8. doi: 10.1007/s00381-021-05101-2. Epub ahead of print. PMID: 33683422.

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