

Introduction

The advent in recent year of stereotactic-guided procedures and access to Fellows of neuropathology and functional and stereotactic neurosurgery in countries with low and middle-high income has allowed the development of minimally invasive neurosurgery for the diagnosis of intracranial lesions in regions such as Latin America. Despite of the development of neuronavigation and robotic stereotactic neurosurgery around the world to our knowledge no any group has reached 100% of diagnostic yield.

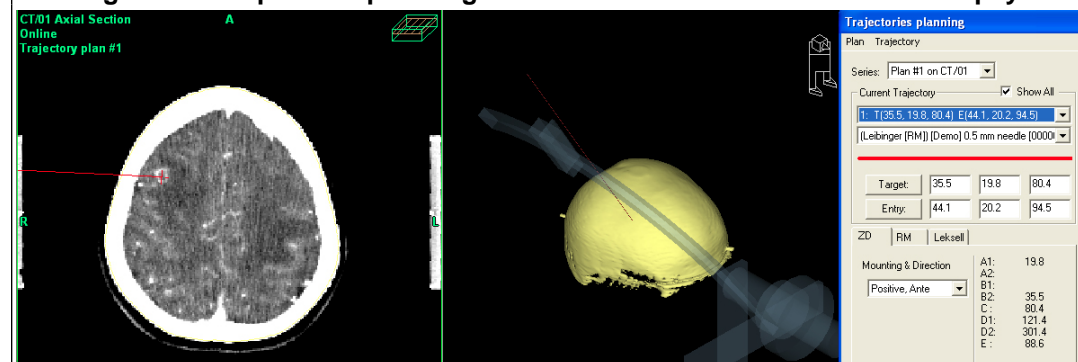
Methods

A review of the medical records of 62 patients who underwent stereotactic frame base-guided brain biopsies during the period from July of 2009 to July of 2014 in a single center was performed. The clinical aspects, the neuroimaging localization, and the morbi-mortality associated to the procedures were registered.

Results

The diagnostic yield reached the 87%, and the remaining was interpreted as unspecific or reactive gliosis. The most frequent result was high-grade Gliomas (34%). The most frequent localizations were deep frontal lobe (28%) and thalamus (21%). Most of the patients debuted with motor deficit (46%) and the complication rate was 1.6% (1 patient with intracranial hemorrhage). The negative 13% represented 8 cases, of which 4 had thalamic localization, 3 had previous diagnosis of pulmonary tuberculosis, and 1 had previous renal transplant.

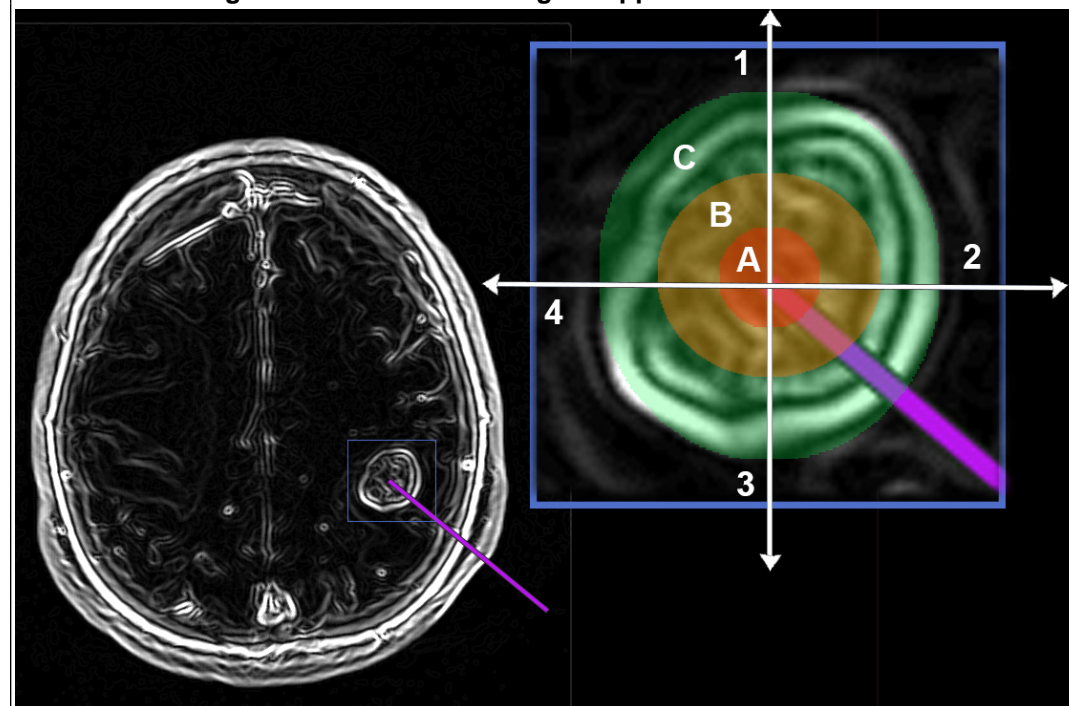
Figure 1. Preoperative planning for Stereotactic Frame-based brain biopsy



Learning Objectives

Different aspects like previous diagnosis of pulmonary TB of deep localization could influence the final result of these biopsies. New prospective studies should be performed to confirm this hypothesis, they should be focused on clinical aspects that could affect biopsies results to reach 100% of diagnostic yield in the future.

Figure 2. Sketch of the surgical approach to the lesion.



(A) At this location 4 samples are taken in the 4 cardinal points (1, 2, 3, 4). Posteriorly the biopsy needle is repositioned 5mm (B) and 10mm (C) out of the core for the other 8 samples.

Conclusions

The complications rate was 1.6% and the diagnostic yield reached the 87%, relatively similar to the observed in different series in the literature. Different aspects like previous diagnosis of pulmonary TB of deep localization could influence the final result of these biopsies. New prospective studies should be performed to confirm this hypothesis, they should be focused on clinical aspects that could affect biopsies results to reach 100% of diagnostic yield in the future, independently if they are frame based-guided or neuronavigation-guided procedures.

References

1. Barnett GH, Miller DW, Weisenberger J. Frameless stereotaxy with scalp-applied fiducial markers for brain biopsy procedures: experience in 218 cases. *Journal of neurosurgery*. 1999 Oct;91(4):569-76.
2. Woodworth GF, McGirt MJ, Samdani A, Garonzik I, Olivi A, Weingart JD. Frameless image-guided stereotactic brain biopsy procedure: diagnostic yield, surgical morbidity, and comparison with the frame-based technique. *Journal of neurosurgery*. 2006 Feb;104(2):233-7.