

Introduction

Anterior temporal lobe resection (ATLR) is an effective treatment for refractory temporal lobe epilepsy (Bonelli et al., 2013; Yogarajah et al., 2010). It involves the removal of the anterior part of the temporal lobe and mesial structures - the amygdala and the hippocampus (Clusmann et al., 2004).

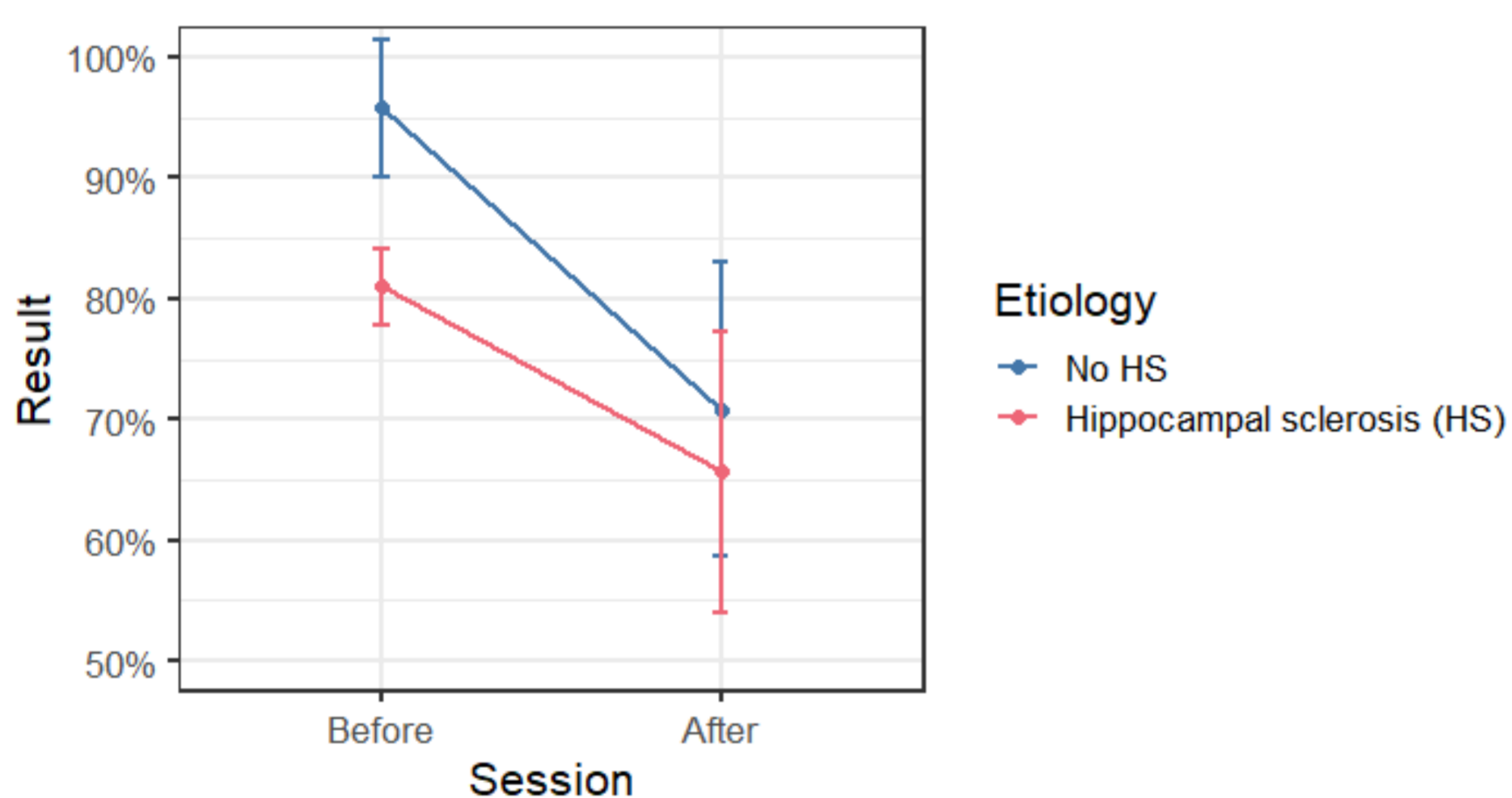
Neuropsychological follow-up studies have shown that a language-dominant ATLR is associated with memory and language worsening in up to 45% of patients (Sherman et al., 2011). This cognitive decline can have a negative effect on the patient's quality of life, especially in the case of poor seizure outcome (Langfitt et al., 2007).

In this study we use comprehensive language battery to analyze pre- and postoperative language status in patients undergoing ATLR. We also investigate whether resection extent, etiology and preoperative language status predict language outcome.

Presurgical results

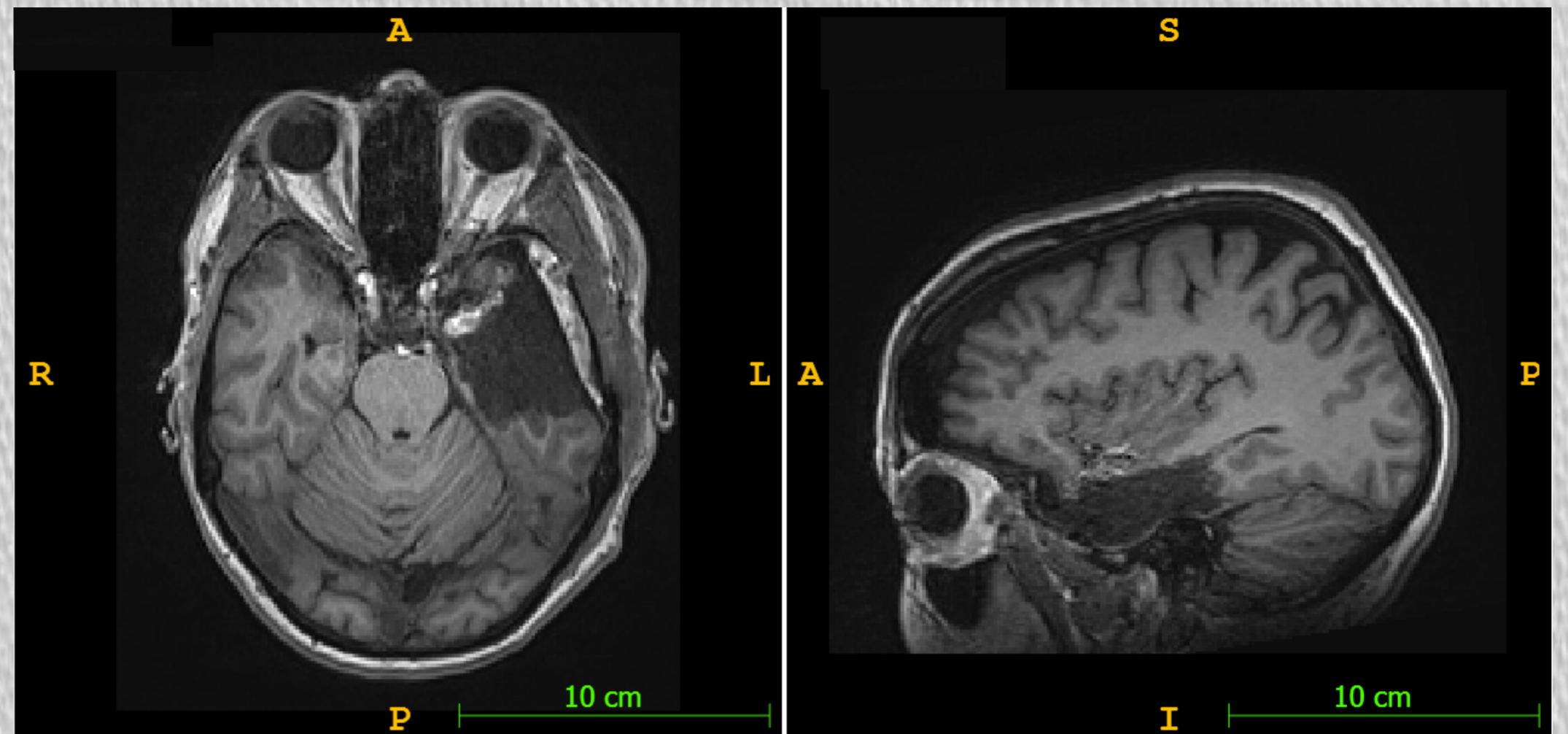
All patients performed relatively well on language tests and, overall showed close to normal language abilities. Some patients had problems with naming and verbal memory as reflected by object naming and sentence repetition tasks. HS was a very strong predictor ($p < 0.001$) of preoperative language status as revealed by linear regression, with sentence repetition affected the most (by 13.7%).

Sentence repetition depending on the etiology (means with 95% CI)



Discussion

Our results are in line with the previous studies in that the etiology of epilepsy plays an important role in interpreting language and memory deficits in epileptic patients. However, future studies that would include other types of data (e.g., tractography) are needed to pinpoint the predictors of language worsening after ATLR more reliably.



Structural MRI (T1) of one of the subjects 6 days after the surgery

Methods

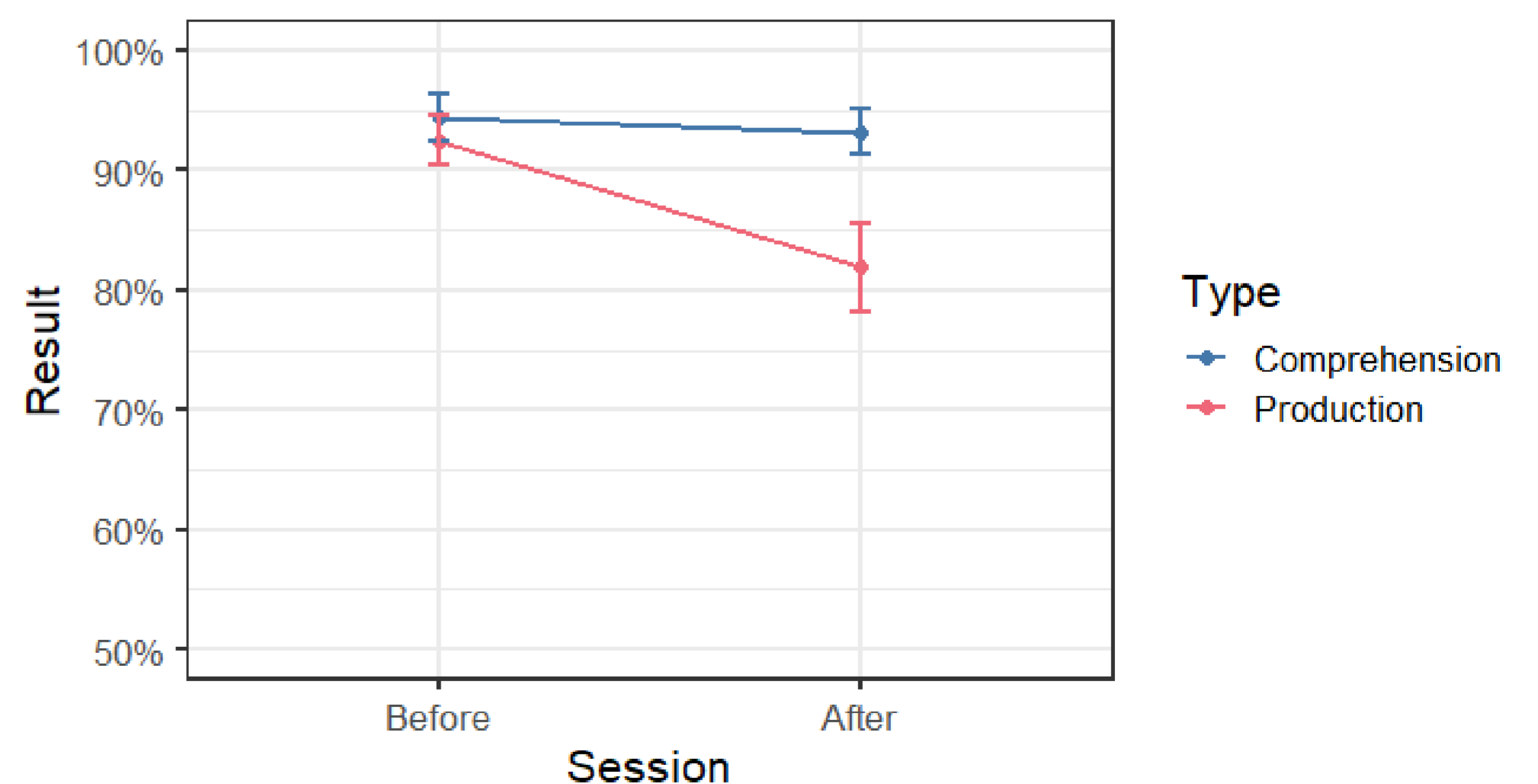
18 patients (age range 20-47, $M = 35.4$ y.o.) who underwent left ATLR due to refractory left temporal lobe epilepsy were included in the study. 11 of the patients had hippocampal sclerosis (HS).

Before and 2-8 days after the surgery all patients were tested with the Russian Aphasia Test (RAT; Ivanova et al. 2016), which assesses both comprehension and production modalities at all levels of linguistic processing. Normalized resection volumes were calculated based on postoperative structural MRI images.

Postsurgical results

Production but not comprehension was significantly affected ($t = 3.4$, $df = 17$, $p = 0.003$): almost half of the patients decreased their production score by 15% or more. Object naming and sentence repetition tasks were affected the most. Patients without HS had more profound worsening, although the trend did not reach significance. Resection volume and preoperative language status were not predictors of postsurgical language outcome in our sample.

Comprehension and production results before and after the surgery (means with 95% CI)



References

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