

Concordance of Stereotactic EEG with Imaging and Surgical findings

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Background

- Stereotactic EEG (SEEG) is an important tool in the pre-surgical workup of patients with localisation related pharmacoresistant epilepsy. SEEG involves placement of depth electrodes through percutaneous drill holes to stereo-tactically defined coordinates in the brain (1).
- In epilepsy patients, concordance refers to the degree of agreement or similarity between different measurements or findings related to epilepsy (2).

Aim

This study aims to assess the concordance of SEEG findings with a dedicated epilepsy protocol MRI and PET-CT. In post-surgical patients, the concordance with histopathological findings was also assessed.

Methodology

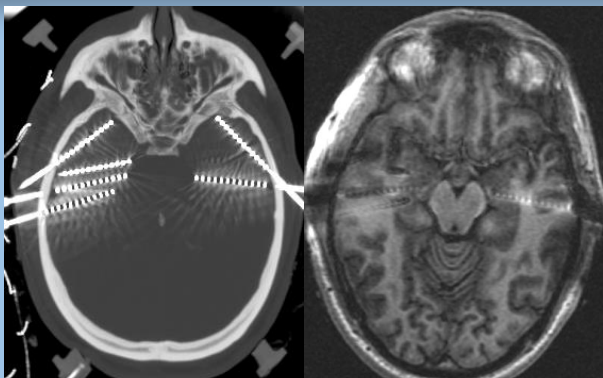
Patients who underwent a SEEG over 5 years (2018 - 2023) were included. Along with patient demographics, SEEG, MRI head and PET-CT findings were noted. Details of surgical site and histopathology reports were collected for patients who had undergone surgery.

Results

- 38 patients met the inclusion criteria, with 3 of those patients undergoing a repeat SEEG.
- 41 SEEG procedures were performed over the 5 years, with 51% being male, 49% female, and the age range being 19 – 60 years.
- 23 patients underwent resective surgery and 2 had Laser Interstitial Thermal Therapy. Of these surgical patients, normal MRI was demonstrated in 11(48%) and abnormal MRI in 12 (52%).
- In 19 patients (both surgical and non-surgical) with an abnormal MRI, there was concordance between the SEEG and MRI in 16 patients (84%). In surgical patients, there was concordance between SEEG, MRI and histopathology findings in 8 patients (66%).
- In 22 patients (both surgical and non-surgical) with a normal MRI, there was concordance between the SEEG and PET-CT in 8 patients (50%). In surgical patients, SEEG, PET-CT and histopathology findings were concordant in 5 out of 8 patients (63%).
- SEEG and histopathology findings were concordant in 18 patients (78%).

Conclusion

In patients with an abnormal MRI, there was a high degree of concordance between the SEEG and MRI (84%) and moderate to high concordance for SEEG, MRI and histopathology (66%). In patients with normal MRI there was moderate concordance between SEEG and PET-CT (50%), and moderate to high SEEG, PET-CT and histopathology concordance (63%). Overall, high concordance of SEEG and histopathology findings (78%).



CT and MRI post SEEG electrode insertion in a patient with normal MRI



CT post right anterior temporal lobectomy

References

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