NEUROPACE

Lateralization

Lateralization of Mesial Temporal Lobe Epilepsy with Chronic Ambulatory Electrocorticography

KING-STEPHENS D, ET AL. EPILEPSIA. 2015 JUN;56(6):959-67

SUMMARY

- Chronic ambulatory ECoG monitoring as performed by the RNS® System may provide clinically meaningful information about lateralization of mesial temporal lobe seizures.
- For patients with bilateral mesial temporal onsets, the length of time to record the first bilateral seizure was, on average, more than 5 weeks after implant.

METHODS

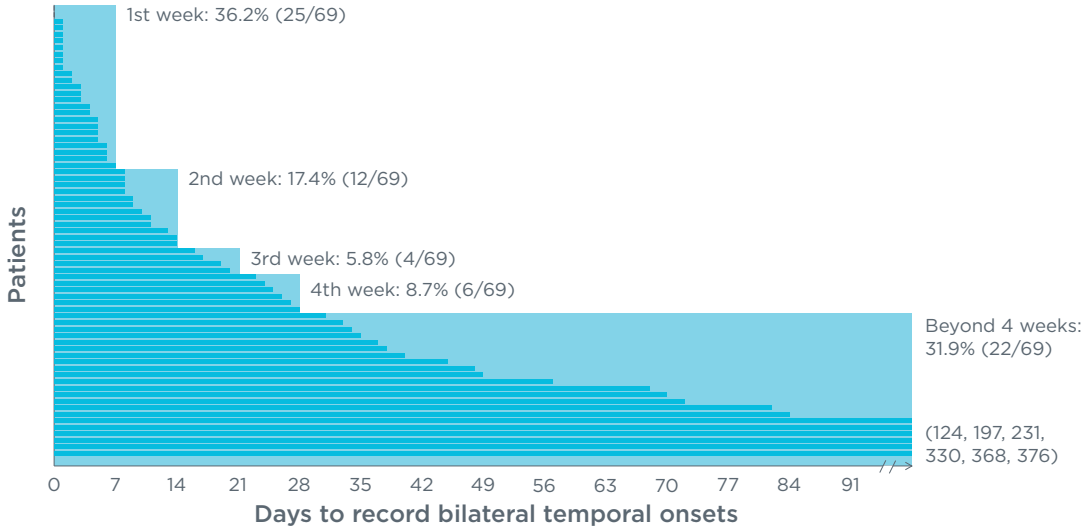
Study Design: Retrospective analysis of ambulatory ECoG data in patients with mesial temporal epilepsy implanted with bilateral mesial temporal lobe electrodes.

Population: 82 patients[1] enrolled in the RNS® System randomized controlled trial. Average follow-up was 4.7 years (1 month - 7 years).

Primary Outcomes: ECoG data were reviewed to determine lateralization of electrographic seizures and time interval required to confirm bilateral seizures.

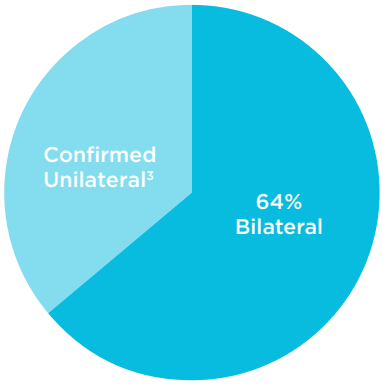
KEY RESULTS

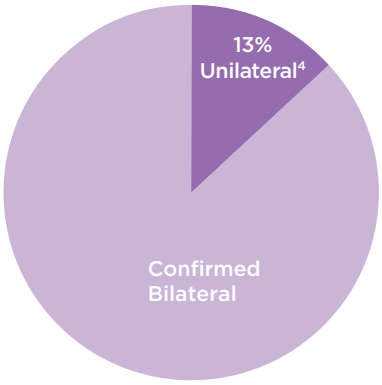
In patients with bilateral seizures, it took an average of **41.6 days** (median 13, range 0–376) to record the first bilateral electrographic seizures in the ambulatory setting.[2]



In 20% of patients, the originally presumed lateralization determined by prior diagnostic testing changed after chronic ambulatory ECoG monitoring:

- **Of 11 patients originally presumed to have unilateral onsets**, 64% had bilateral electrographic seizures
- **Of 71 patients originally presumed to have bilateral onsets**, 13% had only unilateral electrographic seizures





ADDITIONAL OBSERVATIONS

Reasons why bilateral leads were implanted in the 11 presumed unilateral patients:

- Memory concerns per Wada testing (5)
- Bilateral hippocampal atrophy or mesial temporal sclerosis (3)
- Prior contralateral temporal lobectomy (2)
- Discordant EEG and PET lateralization (1)

For subjects who ultimately had bilateral onsets compared with those who had only unilateral seizures, there was no difference in:

- History of treatment with vagus nerve stimulation or epilepsy surgery
- Duration of epilepsy
- Seizure frequency
- Number of AEDs at enrollment
- Frequency of mesial temporal sclerosis or hippocampal atrophy

Footnotes

1. 18 yrs. or older, refractory to 2 or more AEDs and with no more than 2 foci localized by diagnostic testing
2. All patients who eventually had bilateral electrographic seizures (n=69) irrespective of original classification
3. Average follow up of 3.9 years (median 4.1 years; range 0.4 – 7.0 years)
4. Average follow up of 5.0 years (median 4.8 years; range 2.9 - 6.5 years)