The time pattern of post operative seizures was prognostic importance in long term outcome after epilepsy surgery

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Background

Prediction of longer term result by relatively shorter postoperative follow up could substantially assess the medical treatment, assist in patient counseling and prognostication.

No studies have clearly evaluated the time pattern of postoperative seizures related to long-term surgical outcome in epilepsy surgery.

Aim: to assess the time pattern of post operative seizures recurrence as a predictor of long term outcome.

Method:

The retrospective study; single author; Jan 2001-Jun 2011.

Data collection: demography, pre surgical evaluation, postoperative seizures, follow up and outcome were looked at the medical records and outpatient clinic.

Outcome was calculated every post surgical anniversary each year and at the end of the F/U.

Post operative seizures recurrence is any seizures that arise after surgery as SPS, CPS, GTC or its combination. Aura is not included in the analysis.

The time pattern of seizures recurrence is the analysis of post operative seizures based on time duration of occurrence.

Method-Patients Grouping

Group A
Disabling seizures free (Engel class I)

Group B
non-disabling seizures free (Engel class II-IV).

Class I: Free of disabling seizures[a]
A. Completely seizure free since surgery
B. Nondisabling simple partial seizures only since surgery
C. Some disabling seizures after surgery, but free of disabling seizures for at least 2 years
D. Generalized convulsions with AED discontinuation only

Class II: Rare disabling seizures ("almost seizure free")
A. Initially free of disabling seizures but has rare seizures now
B. Rare disabling seizures since surgery
C. More than rare disabling seizures since surgery, but rare seizures for the last 2 years
D. Nocturnal seizures only
Class III: Worthwhile improvement[b]
A. Worthwhile seizure reduction
B. Prolonged seizure-free intervals amounting to greater than half the followed-up period, but not <2 years
Class IV: No worthwhile improvement
A. Significant seizure reduction
B. No appreciable change
C. Seizures worse

Result and discussion

Table 1. Clinical characteristics and outcome after epilepsy surgery in 64 cases. Univariate analysis of prognostic factors for a seizures free outcome at last follow up

	Outcome class	
	Group A (Sz (-)	**Group B Sz (+)**
n	47(73.4%)	17(26.6%)
Male (female)	29 (16)	11 (8)
Mean of age at onset, years	19.8±14.1	15.8±11.0
Mean of age at surgery, years	**30.6±10.6**	**24.3 ± 9.3 ***
Mean of duration of seizure before surgery, years	10.7 ± 9.5	8.4 ± 6.6
Mean preoperative seizure frequency, month	**7.4 ± 8.9**	**21.3±33.5***
MTLE (ETLE) syndrome	14 (31)	5 (14)
Presence of preoperative secondary GTC	21(72.4%)	8 (27.6%)
Presence of lesion in MRI	**33(84.6%)**	**6 (15.4%)***
Presence of lesion in Histopathology	**34(81.0%)**	**8 (19.0%)***
Type of procedures	47(70.3%)	17(29.7%)
Lobectomy	15(70.0%)	6 (30.0%)
Lesionectomy	12(80.0%)	3 (20.0%)
Lesionectomy plus	12(80.0%)	3 (20.0%)
Non lesionectomy and lobectomy	7 (50.0%)	7 (50.0%)
Seizures recurrence in 1st postoperative year	14(50.0%)	14(50.0%)
Mean follow up, years	4.1 ± 2.85	4.4 ± 3.43

Table 2. Incidence of initial seizure based on time of occurrence after surgery: during and after 1 month in the first year.

	post op sz (-)	post op sz (+)	> 1st post op yr	≤ 1st post op yr	≤1 mo	1< sz ≤12 mo
n=64	**24**	**40**	**12**	**28**	**17 (60.7%)**	**11 (39.3%)**
sz free	**24**	**23**	**9**	**14**	**8**	**6**
non sz free	**0**	**17**	**3**	**14**	**9**	**5**
long term good outcome	**100%**	**57.5%**	**75%**	**50%**	**47%**	**54.5%**

No	MRI/CT evaluation immediate after seizure recurrence
1	Abnormal enhance lesion: Inflamation? Tumor invasion?
2	Brain edema
3	Brain edema
4	Brain edema without mid line shift
5	Brain edema, infiltratif tumor
6	Brain edme a, subdural fluid collection
7	Cerebromalacia
8	Cerebromalacia, Bilateral paranasal sinusitis
9	Contusional and SAH with edema perifocal
10	Residual tumor
11	Small SDH

6 cases were not available

Table 3. Incidence of seizures based on the duration of occurrence

Seizures in 3 consecutive months vs Non-3 consecutive months in the 1st year*

Sz within 1st post op year	n=28	Sz free	Non sz free	long term good outcome
Sz recur in non 3 consecutive months (sporadic)	17	13	4	76.47%
Sz recur in 3 consecutive months	11	1	10	9.09%

Table 4. The time pattern of seizures recurrence following epilepsy surgery influencing the long term surgical outcome

	Postoperative seizures-time pattern	n	Group A	Group B	long term good outcome
I	Seizures free in 1st year	12	9	3	75.00%
II	Sporadic*	17	13	4	76.47%
III	Along the 1st year*	11	1	10	9.09%

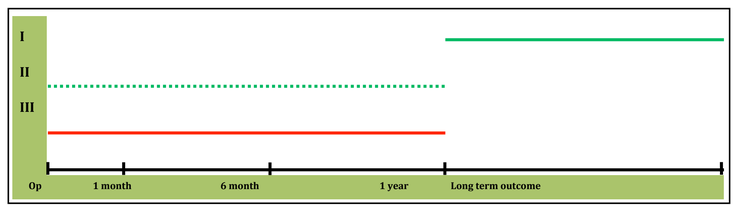

Figure 1. Time pattern of seizures recurrence. Green and Dot Line = Good outcome; Red Line = Not good Outcome

Limitation of study

The type of postoperative seizures and provoked or unprovoked seizures were prognostic importance

- **Patients whose seizures were similar to their preoperative seizures and unprovoked seizures having a significantly worse outcome**

Seizures frequency were difficult to review from retrospective study

Conclusion

- **Good preoperative predictors were age of surgery, preoperative seizures frequency, presence of lesion in MRI and Histopathology**
- **Good postoperative predictors were**
  - **non disabling seizures in 1st year with sporadic pattern**
  - **or beyond 1st post operative year.**

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