

전측두엽 절제술시 해마체 절제 범위와 경련 예후*

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= Abstract =

The Seizure Outcome and Extent of Hippocampal Resection in Anterior Temporal Lobectomy

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Objective : Little consensus exists concerning which temporal lobe structures need to be resected or how much resection should be done during hippocampal resection. The purpose of this study is to identify whether the extent of hippocampal resection influences seizure after anterior temporal lobectomy.

Materials and Methods : The extent of hippocampal resection was assessed in 96 patients who underwent temporal lobectomy for medically intractable complex partial seizures originating from a unilateral seizure focus in the antero-mesial temporal lobe. Patients who had structural lesion were excluded from the study. Postoperative magnetic resonance imaging in the coronal and sagittal planes were used to quantify the extent of the hippocampal and lateral cortical resection. The patients were divided into two groups. Patients who underwent hippocampal resection to the level of the cerebral peduncle were included in the partial resection group, and those who had resection to the level of the colliculus were assigned to total resection group. Seizure outcomes were defined according to the Engel classification and compared between the two groups. Neuropsychologic outcomes in the selected cases were reviewed.

Results : The over - all seizure - free outcome(Engel classification 1) was accomplished in 75%(72/96) of the patients (mean duration of follow - up, 36.8 months). The total hippocampectomy group had a statistically superior seizure outcome than the partial hippocampectomy group(87.3% versus 58.5% seizure - free, p - value =0.001). Also, younger patients had a more favorable outcome. Other variables such as laterality, the extent of lateral cortical resection, age at onset and gender were not significant. The pre - and postoperative memory functions were evaluated in 24 patients. A worse postoperative memory outcome was associated with partial hippocampectomy. However this was not acceptable due to a former bias.

Conclusion : The result of this study conforms that aggressive hippocampectomy resulted in a better seizure outcome.

KEY WORDS : Anterior temporal lobectomy · Hippocampus · Complex partial seizure · Intractable epilepsy.

서 론 , 가

가

10 MRI, PET

7).

1999

가

40

가
 가⁴⁾¹⁸⁾²¹⁾ 7 MRI : 49 SPECT
 (interictal SPECT) 8
 SPECT(ictal SPECT) 가
 FDG PET scan 4 , MR spectroscopy 6
 (Neuropsychologic test) : 65
 가
 가¹⁾⁷⁾¹³⁾¹⁷⁾²⁵⁾ 24 가
 Wechsler Memory Scale(Russell's revision)
 (WMS - R) 가
 (General IQ) , (verbal
 and performance IQ)
 (Wada test) : 87
 (do-
 minance)
 : 14 (14.6%)
 (semiinvasive)
 24 - 가 10
 (subdural strip electrode)
 , 2
 가 (subdural grid)
 가 1 (intraoperative electrocortico-
 graphy) :
 3. 수 술
 가⁷⁾
 가
 2. 수술전 검사 가
 : (sphenoidal electrode) 1cm (, pre-
 (interictal) central sulcus)
 (video - EEG Monitoring) : 2 3cm (3
 24 - 가
 3 (am-
 ygdala)

4. 해마체 절제 범위

7 MRI

가

30)

5. 수술후 경련 조절 예후의 평가

3

free)

가

4)

가

(class)
(aura)

(seizure -
Engel

가

6. 통계학적 검증

t -

가

(p<0.

05),

결 과

96

26.5

56

40

7

47

12.7

36.8

1

가 55 ,

Table 1. Patients' characteristics

	Extent of hippocampal resection		p-value
	Partial (n = 41)	Complete (n = 55)	
Age at surgery(years)	27.3	26.9	0.758
Age at onset of epilepsy(years)	12.6	12.4	0.879
Duration of follow-up (months)	40.8	33.8	0.033
Gender(M/F)	27 / 14	29 / 26	0.216
Extent of lateral cortical resection(cm)	4.26	4.19	0.605
Laterality of resection (left / right)	23 / 18	26 / 29	0.417
Hippocampal sclerosis*	24 / 27	45 / 49	0.694
Cerebral language dominance(left/right)**	31 / 3	42 / 2	0.716
Cerebral memory dominance(left/right)**	21 / 10	31 / 12	0.829

* : Hippocampal specimens could not be obtained in 20 patients.

** : The cerebral dominancy of language or memory could not be identified in some patients. The number of patients represented here is therefore lower than the total number.

가 41

가 (Table 1).

96

72

(75%)가

(Engel class 1)

6 (6.3%)

, 78

class 2

(81.3%)

. 18

8

가

(Engel class 3)

50%

10

가

55

48

(87.3%),

41

24

(58.5%)

(Table 2).

Table 2. Seizure outcome and extent of hippocampal resection

Engel classification	Extent of hippocampal resection	
	Partial resection (n = 41)	Complete resection (n = 55)
1(seizure free)*	24(58.5%)	48(87.3%)
2(rare seizure)	4(9.8%)	2(3.6%)
3(more than 50% reduction)	7(17.1%)	1(1.8%)
4(not improved)	6(14.6%)	4(7.3%)

* : p = 0.001

Table 3. Results of t-test

	Seizure free (n = 72)	Not seizure free(n = 24)	p value
Age at surgery(years)	26.2	29.8	0.07
Duration(years)	14.0	16.5	0.1
Age of onset(years)	12.2	13.3	0.5
Extent of lateral cortical resection(cm)	4.2	4.3	0.74

Table 4. Results of chi-square test

	Seizure free(n = 72)	Not seizure free(n = 24)	Chi-square	p-value
Gender				
M	28	12		
F	44	12	0.9	0.35
Hippocampal Complete resection				
Complete	48	7		
Partial	24	17	10.3	0.002
Laterality of operation				
Left	36	13		
Right	36	11	0.1	0.82

Table 5. Results of logistic regression analysis

Predictor variables	p value	odd ratio
Extent of hippocampal resection	0.015	4.7
Age at surgery	0.03	1.1
Age at onset	0.71	1.0
Gender	0.28	1.9
Lateral cortical resection	0.53	1.3
Laterality of operation	0.75	1.2
Hippocampal sclerosis	0.55	0.5

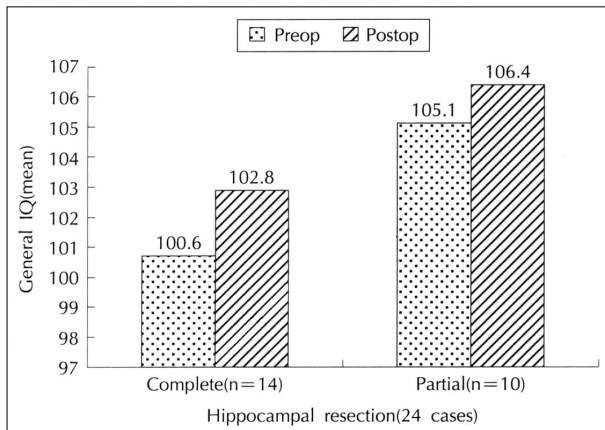


Fig. 1. Preoperative and postoperative general IQ score(24 cases).

(Table 3, 4).

Logistic Regression Test

가 가 (p<0.05, odd ratio^{4,7},

(Table 5).

1. 임상 신경정신학적 검사

24 , 가 가
7 (,
) 가가 가 .
가
(Fig. 1).

(p=0.028, Wilcoxon signed ranks test)(Fig. 2).

가 , (verbal memory)

2. 해마체의 병리조직학적 소견과 예후

69 (71.9%) 7

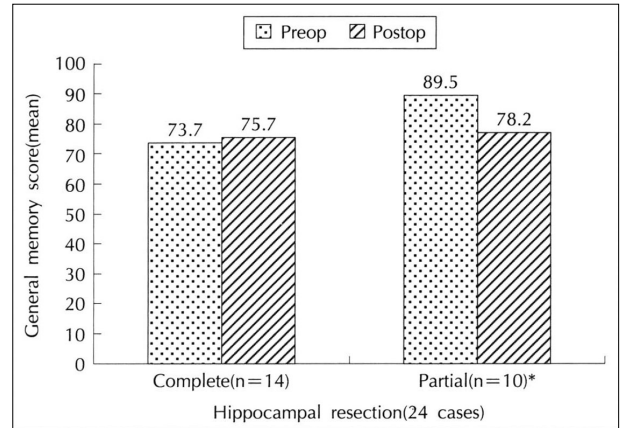


Fig. 2. Preoperative and postoperative memory score(24 cases). *p = 0.26

가 (Table 5).

고찰

가

24).

가

가 19)21).

(; Awakened surgery)

2)

가

29)가

25) , Yasagil Wieser²⁸⁾

(selective amygdalohippampectomy)

Keogan¹⁶⁾

Goldring⁹⁾

가

Rasmussen⁶⁾²²⁾

10
가

3)
(mesiobasal)

39%, 53%

1

가

50%
Spencer²⁶⁾

20)

8) Wieser²⁸⁾

20%

enbloc

MRI¹⁴⁾

MRI

가

가

가

24

23)

MRI

가

16)

1950

가

가

15)

가

가

가

stein¹⁰⁻¹²⁾

Gold-

(bias)

가

가

(completely seizure free)
87.3%(), 58.5%()

가

가

)

96

Logistic regression

24

가

21 가

가 가

가

가

7 가
가
()

1

결 론

가

가

1)

2)

가

3)

4)

5)

가 (bias)

- : 2000 8 2
- : 2000 8 31
- :

138 - 736 2 388 - 1

: 02) 2224 - 3550, : 02) 476 - 6738

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