

Epilepsy

# Psychiatric symptom changes after corticoamygdalohippocampectomy in patients with medial temporal lobe epilepsy through Symptom Checklist 90 Revised

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## Abstract

**Background:** Corticoamygdalohippocampectomy (anterior temporal lobe resection plus amygdalohippocampectomy) is common in epilepsy surgery. Pre- and postoperative psychiatric disorders occurred sometimes in patients with refractory medial TLE. We want to know if CAH has an affirmative effect on the psychiatric symptom of patients with medial TLE through a quantitative method.

**Methods:** Sixty-two patients with medial TLE who had CAH accomplished SCL-90-R questionnaires thrice (presurgical and postsurgical 1 and 2 years). Average GSI scores in SCL-90-R were calculated and statistically analyzed.

**Results:** There was no statistical difference in the presurgical average GSI scores between Engel I and Engel II to IV subgroup. Postoperative 1 and 2 years' average GSI scores of Engel II to IV subgroup were both statistically higher than those of Engel I subgroup. There were no statistical differences between other subgroups in different time. Postsurgical 1 and 2 years' average GSI scores of the whole group and Engel I subgroup were statistically lower than those of presurgery. Postoperative 2 years' average GSI scores of the whole group and Engel I subgroup were statistically lower than those of postsurgical 1 year. For Engel II to IV subgroup, there were no statistical differences among the average GSI scores in different time.

**Conclusion:** Corticoamygdalohippocampectomy could improve the psychiatric symptoms of patients with TLE as assessed by the SCL-90-R. This improvement was related to the therapeutic effect and was not related to sex, lateralization, and MRI abnormality.

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## Keywords:

Temporal lobe epilepsy; Corticoamygdalohippocampectomy; Psychiatric symptoms; Symptom Checklist 90 Revised

*Abbreviations:* AED, antiepileptic drug; AMRI, abnormal MRI; CAH, corticoamygdalohippocampectomy; GSI, global severity index; MRI, magnetic resonance imaging; NMRI, normal MRI; SCL-90-R, Symptom Checklist 90 Revised; TLE, temporal lobe epilepsy.

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## 1. Introduction

As the most common operation in epilepsy surgery, CAH can result in excellent outcome in patients with medial TLE [7,19,21,26]. Pre- and postoperative psychiatric disorders are common in patients with refractory medial TLE [2,6,11,18]. The operation style of CAH is almost the same in every patient with medial TLE. Neurosurgeons are interested in postoperative psychiatric symptom changes. We want to

know if the uniform operation of CAH has an affirmative effect on patient's psychiatric status through a quantitative method. We selected Self-Report Symptom Inventory, SCL-90-R, as the assessment tool for its good validity, easy manipulation, and relatively wide psychiatric symptom coverage [3,9]. We prospectively designed this study. Preoperative and postoperative psychiatric symptoms in 62 patients with medial TLE who experienced CAH in our center were collected through SCL-90-R questionnaire and analyzed to observe the psychiatric symptom changes. This study was approved by the ethics board of Yuquan Hospital, Tsinghua University, China.

## 2. Patients and methods

### 2.1. Patients

The entry criteria were as follows: (1) Patients were older than 16 years. (SCL-90-R is only suitable for patient older than 16 years.) (2) Patients were not illiterate and they had Raven IQ of 70 or higher. (They can understand and finish the written SCL-90-R by themselves.) (3) They were patients with medial TLE who underwent CAH in our center. (4) They have no severe postoperative complications such as intracranial hematoma, hemiparalysis, and aphasia. (5) They finished SCL-90-R questionnaire 3 times (preoperative and 1 and 2 years postsurgery).

The presurgical evaluation process was uniformly applied. Every patient had at least one head MRI scan. Thirty-two hippocampal sclerosis, 5 focal cortical dysplasia, 4 cysts, and 3 tumors were confirmed at histopathology. Twenty-seven cases had NMRI scans and no histopathology. Every patient experienced long-term video electroencephalographic recording (24–142 hours,  $46.6 \pm 4.5$  hours in average). Two to 11 seizures ( $4.3 \pm 2.4$  in average) were typically captured. If the video electroencephalographic, semiology, and MRI of a patient were concordant, we did CAH for this patient. If they were not concordant, intracranial electrodes were implanted. Thirty-four patients were implanted with intracranial electrodes.

Seventy-six patients with medial TLE had surgery during this period. Fourteen patients were excluded (1 patient

younger than 16 years, not suitable for SCL-90-R; 4 patients with IQ lower than 70, unable to finish the questionnaires by themselves; 9 patients whom we lost contact 1 or 2 years later). Finally, the study included 62 patients (36 male, 26 female; age range, 16–46 years; average age,  $28.82 \pm 7.64$  years). The outcomes of the 62 patients with medial TLE are as follows: 43 cases of Engel I (69%) and 19 cases of Engel II to IV (31%). Only one postoperative subdural hematoma occurred in this group, and this patient completely recovered after craniotomy of removing hematoma. No postoperative paralysis and aphasia occurred in this cohort. No one was excluded from the study from operative complications.

In the CAH operation, the left and right anterior temporal lobectomy was about 4.5 and 5 cm, respectively, from the temporal pole. The posterior part of superior temporal gyrus and Labbé vein were retained. The middle brain, the III and IV cranial nerve, and the posterior cerebral artery were carefully protected. Epileptic patients took AED at least 2 years after operation in our department.

### 2.2. SCL-90-R questionnaire

The SCL-90-R questionnaire included 90 items, each rated on a 5-point scale (0–4) of distress ranging from “not at all” (0) to “extremely” (4). Global severity index means the global severity of psychiatric patients. The GSI score of each questionnaire was computed by summing all the scores of the 90 items and then dividing the sum by 90. The average GSI scores were represented by mean  $\pm$  SD. The higher GSI score indicates more psychiatric symptoms and severer psychiatric status. The average GSI score of normal Chinese is  $1.44 \pm 0.43$  [27].

When a patient with TLE in this group was decided to do CAH, neurosurgeon would notice the psychiatrist who executed SCL-90-R questionnaire. The psychiatrist who supervised the questionnaire was blinded to the surgical outcome of the patient. Every patient finished the SCL-90-R questionnaire in simplified Chinese written formula thrice: at about 1 week before operation and postoperative 1 and 2 years. Patients filled out their questionnaires thrice by themselves under the supervision of psychiatrists in the psychiatric department in almost the same environment.

Table 1  
The average GSI scores and *t* test results

	Presurgical	1 y	2 y
Male/female	$2.22 \pm 0.72/2.16 \pm 0.65$ <i>t</i> = 0.66	$1.93 \pm 0.60/1.96 \pm 0.53$ <i>t</i> = 0.63	$1.83 \pm 0.50/1.76 \pm 0.43$ <i>t</i> = 0.63
Engel I/Engel II-IV	$2.16 \pm 0.60/2.20 \pm 0.62$ <i>t</i> = 0.47	$1.88 \pm 0.55/2.23 \pm 0.62$ <i>t</i> = 4.65 *	$1.72 \pm 0.53/2.28 \pm 0.63$ <i>t</i> = 5.53 *
Left/right	$2.15 \pm 0.61/2.20 \pm 0.67$ <i>t</i> = 0.67	$1.98 \pm 0.56/1.91 \pm 0.54$ <i>t</i> = 0.72	$1.86 \pm 0.59/1.78 \pm 0.54$ <i>t</i> = 0.82
NMRI/AMRI	$2.14 \pm 0.63/2.19 \pm 0.66$ <i>t</i> = 0.58	$1.89 \pm 0.52/1.97 \pm 0.55$ <i>t</i> = 0.69	$1.79 \pm 0.51/1.85 \pm 0.57$ <i>t</i> = 0.62

$t_{0.05(61)} = 1.998$ ,  $t_{0.01(61)} = 2.658$ .

\*  $P < .01$ .

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