



Pre- and post-surgical psychiatric assessments and intervention by major epilepsy centers in Japan – Nationwide survey



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ABSTRACT

Background: Although psychiatric issues following epilepsy surgery are now widely recognized as a major problem, actual awareness of these issues by epilepsy centers remains to be elucidated. This is the first known report regarding the use of psychiatric assessments and interventions by epilepsy centers throughout Japan.

Participants and methods: At the beginning of 2016, we sent a questionnaire regarding psychiatric assessments performed before and after epilepsy surgery, psychiatric intervention after surgery, and future plans for dealing with psychiatric issues in relation to epilepsy surgery, which consisted of a total of 24 items, to all members of the Japan Epilepsy Center Association (JEPICA). Nearly all major epilepsy centers in Japan are included in JEPICA, which had 31 members in 2016. Twenty-four (77%) of the 31 centers responded to the questionnaire.

Results: Seventeen (70.8%) centers answered that a psychiatrist was incorporated as part of their epilepsy surgery unit. In addition, 17 (70.8%) noted that psychiatric assessments were obtained prior to surgery, which were performed by psychiatrists in 8 (33.3%) centers and psychologists in 11 (45.8%). In 23 (95.8%) of the centers, the risk of occurrence of psychiatric illness following surgery was routinely explained prior to surgery, at least to surgical candidates with high susceptibility. In total, cases of psychiatric illness following surgery had been experienced in 16 (66.7%) centers, with depression as the most commonly encountered (41.7%), followed by anxiety (33.3%), psychosis (25.0%), and psychogenic non-epileptic seizures (8.3%).

Discussion: Strong points of epilepsy centers in Japan include serious concern regarding post-surgical psychiatric illness by nearly all members of JEPICA and explanation of the risk of psychiatric adverse events provided beforehand to their patients. On the other hand, the small size of some epilepsy centers, along with lack of a standardized method for evaluation of psychiatric symptoms as well as dependence on the individual willingness of psychiatrists assigned as members of the epilepsy units, seem to have led to significant diagnostic and therapeutic gaps among epilepsy centers regarding psychiatric issues related to epilepsy surgery.

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1. Introduction

Psychiatric issues are widely recognized as a major problem following surgical intervention in patients with epilepsy [1], and a number of investigations regarding the risk of post-surgical psychiatric complications have been published since the turn of the century, though the reported prevalence varies greatly from 17% to 65% [2–10]. Further, rates of serious suicide attempts, completed suicide, and de novo psychosis have been shown to increase following epilepsy surgery [11,12], and may impede the benefits otherwise brought by seizure freedom [13]. As such, appropriate psychiatric assessments and establishment of protocols for pertinent intervention by surgical centers are mandatory [13–16].

Although awareness regarding the significance of potential psychiatric problems is now well established among researchers, findings

regarding how widely such awareness is actually shared among those in charge of surgical intervention remain scant. Notably, no nationwide surveys in regard to this issue have been conducted in Japan, except for sporadic reports derived from specific individual epilepsy centers [2,3]. This report presents findings of the first survey of major epilepsy centers throughout Japan in regard to the present status of psychiatric assessments and interventions. By presenting these results, we hope to reveal characteristics of psychiatric assessments related to epilepsy surgery conducted in Japan and to bridge possible awareness gaps between epilepsy centers.

2. Participants and methods

2.1. Participants

After receiving approval from the ethical committee of Aichi Medical University, the questionnaire was sent to all members of the Japan Epilepsy Center Association (JEPICA) at the beginning of 2016. Nearly

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all major epilepsy centers in Japan are included in JEPICA, which consisted of 31 members in 2016. Official membership in JEPICA is granted only after the institute is staffed with a specialized surgical team for epilepsy, and also equipped with a seizure monitoring unit capable of documenting long-term video-EEG findings together with pertinent brain imaging equipment and a multidisciplinary epilepsy care unit. In 2015, more than 95% of all surgeries related to epilepsy performed in Japan were conducted by JEPICA members. Twenty-four (77%) of those 31 centers responded to the questionnaire. No information is available from the non-responding institutions, which could be a potential source of response bias. Details of the epilepsy surgery procedures performed at the 24 epilepsy centers in the preceding year are shown in Table 1. We categorized the 8 centers with 5 or fewer annual surgical cases as small-scale centers (33%).

2.2. Survey creation

As the genesis of this study, JEPICA administrative members requested the second author (T.F.) to investigate the current status and awareness of psychiatric assessments and treatment in epilepsy centers, as well as the interrelationship between epilepsy centers and local doctors incorporated into the referral chain. The questionnaire items were created and chosen by the first (H.G.) and third (K.K.) authors to fulfill that request, and later reviewed by JEPICA administrative members. Following modifications done in response to their review, 24 items were finally chosen and given final approval by the JEPICA administrative members (see Supplementary materials). Since documented reports regarding psychiatric aspects before and after surgery were generally lacking, and because we hoped to maximize the rate of response, answers by the responders from memory were also allowed. In principle, JEPICA members directly responsible for surgical intervention when treating epilepsy patients at the facilities in question answered the survey questions.

2.3. Procedure

We sent a questionnaire regarding psychiatric assessments performed before and after epilepsy surgery during the preceding year (2015), the process for availability, type, and assessment of need for psychiatric intervention when required after surgery, and future plans for realistic as well as idealized ways of dealing with psychiatric issues in relation to epilepsy surgery. Between 3 and 8 answers were available for each of the 24 items. In addition to psychiatrists, psychologists, and neuropsychologists, we included occupational therapist as an alternative answer for Question 19 regarding who leads psychiatric care at the institution. This was done because occupational therapists are listed as staff at epilepsy centers in Japan and have responsibilities in regard to the mental health of patients, along with psychologists and psychiatrists, as mental support is often given by therapy provided through those therapists, such as crafting woodwork and ceramics objects. For example, a simple repetitive task such as molding clay is considered to exert calming effects, even for patients with acute psychosis [17]. Answered questionnaires were returned directly to JEPICA, then data

anonymity was set by JEPICA administrative staff, before delivery to us for analysis.

3. Results

- 1) Staff in charge of psychiatric assessments. Twenty (70.8%) of the 24 centers answered that they performed psychiatric assessments before surgery, while psychiatric assessments were conducted after surgery in 19 (79.1%). Psychiatric assessments performed prior to surgery were done by psychiatrists in 8 (33.3%) centers and psychologists in 11 (45.8%). Furthermore, regular screening of psychiatric illness using rating scales was conducted in 7 (25.0%) centers. Following surgery, psychiatric assessments were done by psychiatrists in 9 (37.5%) and psychologists in 11 (45.8%) centers.
- 2) Screening tools. Regular postoperative screening of psychiatric illness with rating scales was conducted in 7 (29.1%). Screening tools utilized included K6 (Kessler Psychological Distress Scale), HAM-D, (Hamilton Depression Scale), NDDI-E (Neurological Disorders Depression Inventory for Epilepsy), and SDS (Self-rating Depression Scale for depression), while HAM-A (Hamilton Anxiety Rating Scale) and MAS (Manifest Anxiety Scale) were employed for anxiety, YMRS-J (Young Mania Rating Scale) for manic states, PANSS (Positive and Negative Syndrome Scale) for psychosis, and MMPI (Minnesota Multiphasic Personality Inventory) for personality trait. MINI (Mini-International Neuropsychiatric Interview) and POMS (Profile of Mood States) were used for comprehensive assessments of psychiatric illness, and QOLIE-31-P for quality of life. In 2 centers, WAIS (Wechsler Adult Intelligence Scale), WISC (Wechsler Intelligence Scale for Children), and/or FAB (a frontal assessment battery used at bedside) were erroneously listed as screening tools for psychiatric illness. The frequency of use of the noted screening tools is shown in Fig. 1. Notably, while such tools were applied in 5 of the 11 centers when psychologists interviewed patients (45.5%), they were used in only 1 of 8 where psychiatrists conducted the patient interviews (12.5%).
- 3) Factors contributing to skipped psychiatric assessment. Among the 8 small-scale centers, 5 (62.5%) did not register any cases of psychiatric illness following surgery, whereas only 3 (18.8%) of the larger-scale centers did not detect any post-surgical psychiatric illness. Furthermore, 3 of 7 (42.9%) centers without a psychiatrist as an integral member of the epilepsy surgery team did not report psychiatric illness following surgery, while that ratio dropped to 29.4% (5 of 17) among centers that had psychiatrists as part of their epilepsy surgery team.

We used logistic regression analysis to examine factors contributing to the notable quantity of skipped pre-surgical psychiatric assessments in Japanese epilepsy centers. Three independent variables – absence of a psychiatrist as an inherent member of the epilepsy surgery unit, no registration of psychiatric illness after surgery, and the small scale of many epilepsy centers – were incorporated into our analysis. Although only a trend was shown statistically, the small-scale centers tended to skip pre-surgical psychiatric assessments 9 times more often than the large-scale centers (Wald value 2.982, $p = 0.084$, odds ratio 9.409 [CI: 0.739–119.8]).

- 4) Prior explanation of risk of psychiatric illness. In 9 (37.5%) centers, the risk of occurrence of psychiatric illness following surgery was explained to the patient without exception, while it was explained to selected patients and/or their family members at 14 (58.3%). In 9 (64.2%) of those 14 centers, the warning of risk was given if there was a prior history of psychiatric illness preceding surgery. In 8 (57.1%), notification of that risk was provided in a manner dependent on the nature of the epilepsy, such as limbic structure involvement. Only a single center answered that the risk of psychiatric illness was never explained.

Table 1
Number of surgical cases in 24 centers which responded to this survey.

No. of cases	Total number of surgical cases (n = 24)	Medial temporal resection (n = 24)	Resection of extra-temporal cortical area ^a (n = 24)	Others ^b (n = 24)
None	–	3 (12.5%)	5 (16.1%)	7 (29.2%)
1–5	8 (33.3%)	8 (33.3%)	11 (35.5%)	2 (8.3%)
6–10	0	5 (20.8%)	6 (25.0%)	4 (16.7%)
≥11	16 (66.7%)	8 (33.3%)	2 (8.3%)	11 (45.8%)

^a Lateral temporal resection with preservation of medial temporal lobe included.

^b Others include callosotomy, hemispherectomy, multiple subpial resection, and stereotactic thermocoagulation for hypothalamic hamartoma. VNS is not included in this.

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