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FULL-LENGTH ORIGINAL RESEARCH

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The experience of the multidisciplinary team in epilepsy management from a resource-limited country

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Summary

Objective: The use of multidisciplinary teams (MDTs) is a global trend in disease management, while China is still at the exploratory stage MDTs. We aimed to summarize our experience and assess the impact of MDT use in managing patients with epilepsy and optimizing their seizure outcomes.

Methods: Our MDT is staffed with skilled epileptologists, electroencephalography experts, neurosurgeons, child neurologists, radiologists, and psychiatrists. The MDT discussion has been carried out once or twice a week since 2013. We reviewed our consecutive patients discussed at our MDT from March 2013 to December 2017. The detailed clinical characteristics, suggestions, and follow-up data were collected and analyzed.

Results: A total of 1088 patients (604 male, 484 female) were included in this study. The median age at MDT discussion was 21 years (range 10 months to 79 years). Three hundred eighty-seven patients (35.6%) were younger than18 years of age. The median age at seizure onset was 12 years (range 2 days to 77 years). Most patients (80.4%) had at least one seizure per month and most (77%) took 2 or more antiepileptic drugs. A total of 70.6% of patients reached the standard of drug-resistant epilepsy and 74.2% of brain magnetic resonance imaging (MRI) studies detected positive findings. After detailed MDT discussion, 18 patients were diagnosed as having nonepileptic diseases, including psychogenic nonepileptic seizure, syncope, sleep disorder, paroxysmal kinesigenic dyskinesia, withdrawal symptom, and cerebral palsy. Three hundred eighty-two patients (35.1%) were suitable for resective surgery. Among the postoperative patients successfully followed up for more than 1 year, 72.7% (136/187) received favorable outcomes (Engel class I). The seizure-free rate was 78.6% after temporal lobe surgery and 58.9% after extratemporal surgery.

Significance: Epilepsy management can be optimized through MDT discussion to attain accurate diagnosis and favorable seizure outcomes. There is still room for MDT improvement in resource-limited countries.

KEYWORDS

diagnosis, epilepsy, multidisciplinary team, treatment

1 | INTRODUCTION

Epilepsy is an important public health problem that affects over 50 million people worldwide.[1] In China, the prevalence of epilepsy is more than 9 million, and another 450 000 new cases are diagnosed annually.[2] Uncontrolled seizures have a negative impact on a patient's quality of life, particularly the social, economic, and cognitive aspects.[3–5] Although most patients respond well to antiepileptic drugs (AEDs), approximately one-third will become drug-resistant and only 4% acquire seizure freedom through additional pharmacotherapy after failure of 2 first-line AEDs.[6–8] Thus, epilepsy surgery is increasingly being considered as an important treatment option for intractable epilepsy, and comprehensive preoperative assessment is essential for epilepsy surgery.[9]

Presurgical evaluation involves multiple disciplines, including but not limited to neurology, electroencephalography, neuroradiology, neurosurgery, and neuropsychology. The multidisciplinary team (MDT) is a global trend in disease management; however, use of MDTs for epilepsy management has sprung up in China only in recent years. Epilepsy centers in resource-limited countries usually lack sufficient evaluation technologies, such as positron emission tomography/computed tomography (PET/CT), single-photon emission computed tomography (SPECT), functional magnetic resonance imaging (fMRI), electrocorticography (ECoG), and stereo-electroencephalography (SEEG). In addition, the high costs of these technologies without medical insurance coverage largely limit their use.[10,11] To address these concerns, it is necessary to understand the current epilepsy MDT situation in resource-limited countries, especially in China. However, up to now, there has been no published research revealing the relevant MDT experience.

This present study aimed to summarize our experience with MDT and assess its effect on screening surgical candidates, managing patients with epilepsy and optimizing their seizure outcomes.

Key Points

- Use of MDTs is a global trend in disease management, while China is still at the exploratory stage
- Our MDT includes skilled epileptologists, electroencephalography experts, neurosurgeons, child neurologists, radiologists, and psychiatrists
- One thousand 88 consecutive patients were reviewed from March 2013 to December 2017
- MDT discussion contributes to attaining accurate diagnosis and favorable seizure outcomes
- There is still room for MDT improvement in resource-limited countries

2 | METHODS

2.1 | Subjects

We established an MDT in the epilepsy center of West China Hospital in March 2013. Patients were discussed in our MDT once a week before 2017 and twice a week in 2017 and later. Our MDT consists of experienced adult epileptologists, child neurologists, electroencephalography experts, neurosurgeons, radiologists, and psychiatrists. Epileptologists were responsible for epilepsy diagnoses, management, and presurgical evaluation. Neurosurgeons were responsible for operation and also participated in presurgical evaluation. Electroencephalography experts helped analyzing electroencephalography (EEG) results, whereas radiologists assisted with interpreting the neuroimaging findings. Because there were no neuropsychologists or neuropsychiatrists in our center, we called upon experienced psychiatrists to provide differential diagnoses and address psychiatric concerns, and to manage epilepsy-related neuropsychological or neuropsychiatric problems.

Consecutive patients were included in this study from March 2013 to December 2017. The inclusion criteria were as follows: (a) patients with a definite diagnosis of epilepsy according to the 2010 International League Against Epilepsy (ILAE) classification[12] and willingness to undergo surgery; (b) patients with a definite diagnosis of epilepsy and ineffective drug treatment; and (c) patients who were prediagnosed as having epilepsy but the diagnosis was doubted by other neurologists.

2.2 | MDT protocol

The MDT discussion followed a similar pattern: (a) detailed collection of clinical history, video-EEG, and neuroimaging findings; (b) discussion on the diagnosis and seizure type; (c) suggestions for management according to different diagnoses; and (d) face-to-face communication with patients and their families. Detailed MDT protocol is shown in Figure 1. After MDT discussion and epilepsy surgery, patients were followed up every 6 months to assess their seizure outcomes. Surgical outcomes were evaluated according to the Engel classification.[13]

2.3 | Statistical analysis

Detailed clinical characteristics, suggestions, and follow-up data were collected and analyzed. Age is shown as median, whereas other data are shown as means. Data were analyzed in terms of percentages. Excel (2016; Microsoft) and SPSS (version 20.0; IBM) was used for analysis.

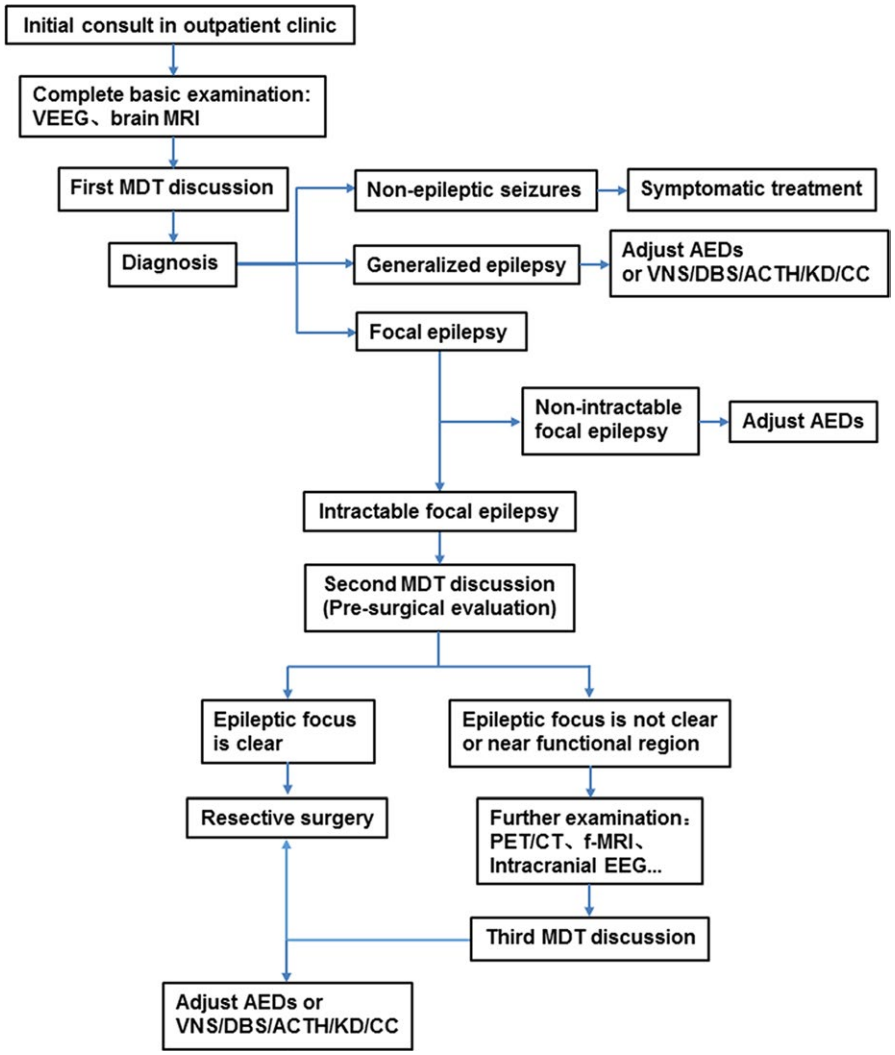

FIGURE 1 MDT assessment process. ACTH, adrenocorticotropic hormone; AEDs, antiepileptic drugs; CC, corpus callosotomy; DBS, deep brain stimulation; EEG, electroencephalography; f-MRI, functional MRI; KD, ketogenic diet; MDT, multidisciplinary team; MRI, magnetic resonance imaging; PET/CT, positron emission tomography/computed tomography; VEEG, video-electroencephalography; VNS, vagus nerve stimulation

3 | RESULTS

3.1 | Demographics

A total of 1088 patients (604 male, 484 female) were included in this study. Most patients were referred by clinicians in an outpatient clinic. The number of patients at MDT discussion increased gradually every year (Figure 2).

The median age of patients at MDT discussion was 21 years (range 10 months to 79 years). Patients younger than 18 years of age accounted for 35.6%. The median age at seizure onset was 12 years (range 2 days to 77 years). The mean course of disease was 8.8 years. Explicit family history of epilepsy was found in 9 patients and febrile convulsion history was found in 54 patients (5%). Most patients had at least one seizure per month and took 2 or more AEDs. A total of 768 patients (70.6%) met the standard of drug-resistant epilepsy: failure of adequate trials of 2 tolerated and appropriately chosen and used AED schedules (whether as monotherapy or in combination) to achieve sustained seizure freedom.[8] No obvious poor compliance or inappropriate lifestyle was found. Although blood concentrations were not monitored regularly, the daily doses of 2 previous AEDs reached their 50% defined daily dose (DDD). Almost all patients underwent brain MRI. The most common etiology was structural abnormality, especially hippocampal sclerosis. Ictal EEG was captured in nearly half of the patients, whereas PET/CT was performed in only small portion. Furthermore, there was no SPECT or SEEG data. Details are provided in Table 1.

3.2 | MDT evaluation results

After comprehensive assessment, different suggestions were given from MDT, including AEDs adjustion, resective surgery, SEEG, vagus nerve stimulation, ketogenic diet, adrenocorticotropic hormone, or symptomatic treatment. (Table 2). A definite diagnosis of epilepsy was made for 1070 patients according to the 2010 International League Against Epilepsy (ILAE) classification. Among these patients, 382 (35.1%) were suitable for resective surgery and 261 of the 382 had undergone the surgery before 2018. Other patients with epilepsy were

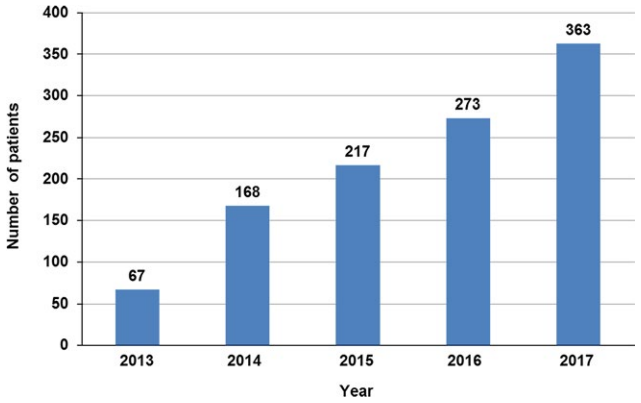

FIGURE 2 Tendency of MDT assessment

advised to adjust AEDs, wait for SEEG evaluation, or consider other options, such as vagus nerve stimulation (VNS), adrenocorticotropic hormone (ACTH), ketogenic diet (KD), or corpus callosotomy (CC). In addition, 18 patients were diagnosed as having nonepileptic diseases and were advised to withdraw AEDs and begin symptomatic treatment if necessary. Their details were shown in Table 3.

3.3 | Surgical outcomes

Up to the end of 2017, subdural EEG was performed in 28 patients (2.6%). Only one patient (1/28, 3.6%) sustained a subdural hematoma, which was removed in the subsequent resection surgery. Clear localization of the epileptogenic focus was achieved in 24 patients, who underwent further resection surgery.

Among the 211 patients who underwent resective surgery and were followed up for more than 1 year, 24 (11.4%) were lost to follow-up and 136 of the remaining 187 (72.7%) had favorable seizure outcomes (Engel class I). Detailed surgical outcome data are presented in Table 4. Most surgeries (70.1%) were temporal lobe surgery. The seizure-free rate of temporal lobe surgery was 78.6%, whereas that of extratemporal lobe surgery was 58.9%. Obvious neurologic deficits persistented in 6 patients (3.2%), including hemiplegia in 3 patients, hearing loss in 2 patients, and hydrocephalus in one patient. In addition, 4 patients (2.1%) died during the follow-up period. Only one patient (0.5%) died of postoperative brain hemorrhage, swelling, and infection. The other 2 died of tumor recurrence and one died of suicide. Unfortunately, the quality of life was not assessed.

3.4 | Outcomes of nonsurgical cases

Outcomes of patients for whom resection surgery was not recommended are shown in Table 5. To better evaluate the effects, we included only the patients who were followed for more than 1 year. And we divided the effects into improved (symptom control ≥50%) and unimproved group (symptom control ˂50%).

TABLE 1 Demographic characteristics of patients

Variable	No.	%
Sex		
Male	604	55.5
Female	484	44.5
Age at discussion (y)		
0-6	70	6.4
7-12	123	11.3
13-17	194	17.8
18-65	690	63.4
>65	11	1.0
Disease duration (y)		
<2	196	18.0
2-10	476	43.8
>10	416	38.2
Febrile convulsion history	54	5.0
Seizure type		
Generalized seizures	206	18.9
Focal seizures	750	68.9
Generalized combine focal seizures	113	10.4
Unknown	19	1.8
Seizure frequency		
Daily	253	23.3
Weekly	276	25.3
Monthly	374	34.4
>Monthly	185	17.0
AEDs (numbers)		
<2	249	22.9
=2	352	32.3
>2	487	44.8
Ictal EEG	534	49.0
PET/CT	130	11.9
Etiology		
Genetic	9	0.8
Structural	725	66.6
Hippocampal sclerosis	198	27.3
Encephalomalacia[a]	137	18.9
Cerebral dysplasia	106	14.6
Neoplasia	63	8.7
Vascular malformation	60	8.3
Others	161	22.2
Metabolic	4	0.4
Immune	3	0.3
Infectious	41	3.8
Unknown	306	28.1

AEDs, antiepileptic drugs; EEG, electroencephalography; PET/CT, positron emission tomography/computed tomography.
[a]Caused by head trauma or intracranial surgery.

TABLE 2 MDT evaluation results

Suggestion	No.	%
Adjust AEDs	581	53.4
Resective surgery	382	35.1
SEEG	72	6.6
VNS	20	1.8
KD	9	0.8
ACTH	6	0.6
Symptomatic treatment	18	1.7

AEDs, antiepileptic drugs; ACTH, adrenocorticotropic hormone; KD, ketogenic diet; SEEG, stereo-electroencephalography; VNS, vagus nerve stimulation.

TABLE 3 Details of nonepileptic seizures

Disease	No.
Psychogenic nonepileptic seizure	6
Syncope	4
Sleep disorders	3
Paroxysmal kinesigenic dyskinesia	3
Withdrawal symptom	1
Cerebral palsy	1

Because SEEG was not carried out before 2018, those patients were still on the waiting list. Besides, the outcomes of other treatments, such as AED adjustment, VNS, KD, ACTH, or symptomatic treatment, were not as good as resection surgery.

4 | DISCUSSION

MDTs are a global trend in disease management, whereas in resource-limited countries, epilepsy MDTs have become available only in recent years. Epilepsy management requires not only a team of experienced specialists but also expensive electrophysiologic and neuroimaging equipment. In other words, epilepsy MDTs depend a lot on the economic and resource level of a country. In resource-limited countries, most epilepsy centers lack sufficient evaluation technologies, such as high-resolution MRI, PET/CT, SPECT, f-MRI, ECoG, and SEEG. Furthermore, most of these techniques cost a lot, without medical insurance covered. Thus there may be some differences between resource-limited and resource-rich countries in MDT establishment and practice. However, these data on epilepsy MDT are barely reported in resource-limited countries, especially in China. Thus, we hope to offer insight into the situation of epilepsy MDTs in resource-limited countries. We reviewed 1088 consecutive patients with epilepsy surgery who were willing to be discussed at our MDT in West China Hospital from March 2013 to December 2017. Some of our findings were in line with those or resource-rich countries, whereas others were different, as expected.

The seizure-free rate from epilepsy surgery can reach 70%, or even higher[14]; however, in resource-limited countries, only a limited number of patients have a correct understanding of epilepsy surgery and opportunities to acquire professional presurgical evaluation. That is why we established our MDT—to help manage epilepsy patients and screen appropriate surgical candidates. Because more and more patients and even doctors acknowledge the advantages of MDTs, the number of patients at our MDT discussion increased gradually every year, from 67 in 2013 to 363 in 2017. Most of our patients who were discussed at our MDT were recommended by clinicians at outpatient clinics after initial consultation on epilepsy surgery and basic tests of video-EEG and brain MRI scan, which, to a great extent, guarantee the quality of the MDT discussion. In addition, there were still a small number of patients with a strong desire for surgery but some confusing attacks which might not be true seizures. Accurate diagnosis may become the most important goal of the MDT discussion. Most MDT procedures followed similar patterns. After an initial consult in the outpatient clinic, most patients were advised to complete a basic examination, such as EEG and brain MRI. If this patient was potentially suitable for epilepsy surgery, met the standard of drug-resistant epilepsy, or had some confusing symptoms, he or she would be advised to attend our first MDT discussion. For the first MDT discussion, a detailed clinical history, video-EEG, and neuroimaging findings would be carefully collected. The MDT would discuss their diagnoses and give them individualized suggestions face to face. If the condition of the patient is not clear or this patient has intractable focal epilepsy, further testing would be advised and a second or third MDT discussion would be carried out. After an MDT discussion and epilepsy surgery, patients would be followed up at an outpatient clinic or by phone to assess their seizure outcomes.

Different from some other epilepsy centers, our MDT included adult epileptologists and child neurologists; hence 35.6% of our patients were younger than 18 years of age. Although pediatric epilepsy is different from adult epilepsy and it seemed suitable for younger patients to remain in a pediatric epilepsy center, there was no special pediatric neurosurgery in our pediatric hospital and our pediatric hospital only treated patients younger than age 14. Thus children with epilepsy who were suitable for surgery or older than age 14 had to find a new neurosurgeon or adult neurologist. Our MDT could offer some help with that. It also reflected a good cooperation between adult and pediatric epilepsy services and offered a convenient transition from a pediatric to an adult epilepsy care center.[15]

Similar to most epilepsy centers, most of our patients had drug-resistant epilepsy, which was necessary for them to start presurgical evaluation. Presurgical evaluation was indeed the main purpose of our MDT conference. The average epilepsy duration before our MDT evaluation was 8.8 years, which was shorter than the 10 years mentioned in a previous study.[16] The result reflected the increasing awareness of surgery in resource-limited countries. In our study, video-EEG and brain

TABLE 4 Seizure outcomes after resective surgery

	Resective surgery (N = 187)	
	Temporal lobe surgery (N = 131, 70.1%)	**Extratemporal lobe surgery (N = 56, 29.9%)**
Engel class I	103 (78.6%)	33 (58.9%)
Engel class II	12 (9.2%)	6 (10.7%)
Engel class III	8 (6.1%)	12 (21.4%)
Engel class IV	8 (6.1%)	5 (8.9%)

TABLE 5 Outcomes of nonsurgical cases (follow-up ˃1 y)

Treatments	No.	Symptom improved (control ≥50%)	Symptom unimproved (control ˂50%)
Adjust AEDs	306	89 (29.1%)	217 (70.9%)
VNS	5	2 (40%)	3 (60%)
KD	2	1 (50%)	1 (50%)
ACTH	4	1 (25%)	3 (75%)
Symptomatic treatment	13	5 (38.5%)	8 (61.5%)

AEDs, antiepileptic drugs; ACTH, adrenocorticotropic hormone; KD, ketogenic diet; VNS, vagus nerve stimulation.

MRI were the most common assessment measures. And the proportion of positive MRI findings reached 74.2%, which meant most of our cases were of symptomatic epilepsy. The most common structural abnormality discussed at our MDT was hippocampal sclerosis, followed by encephalomalacia caused by head trauma or intracranial surgery. If the patient's symptoms and EEG and MRI findings were coincident, surgery was advised, with no need for additional measurements.[17] If the patient's symptoms and EEG and MRI findings were discordant or MRI was negative, further PET/CT or subdural electrode implantation were advised. However, many patients gave up trying these tests because of the expensive without insurance coverage. Furthermore, we had not used SEEG and SPECT in our epilepsy center because of lack of relevant equipment or support technology.

After MDT discussion, 18 patients were confirmed as having nonepileptic seizures, including psychogenic nonepileptic seizure, syncope, sleep disorder, paroxysmal kinesigenic dyskinesia, withdrawal symptoms, and cerebral palsy. It may be because many local doctors lacked adequate knowledge of differential diagnosis in this resource-limited country. MDT discussion may be a good solution for this. In addition, 35.1% patients were suitable for resective surgery. The high proportion of surgical candidates may result from our high proportion of symptomatic epilepsy. The others were advised to adjust AEDs or consider other options, such as VNS, corpus callosotomy, ACTH, or KD. However, limited by the expensive and relative low efficacy rates, these other options were rarely chosen in low-income patients. Otherwise, different from other resource-rich countries, deep brain stimulation or laser therapy for epilepsy was not carried out at our center.

In our study, a total of 72.7% patients received favorable seizure outcomes (Engel class I) for at least 1 year. The seizure-free rate after temporal lobe surgery was 78.6%, and 58.9% after extratemporal surgery. These results were better than those of previous studies. As reported in the first randomized controlled study of temporal lobe epilepsy, the seizure-free rate at 1 year was 58%.[18] Some other studies summarized the mean seizure free rate as 62.4%-66% for temporal lobe resection and 27%-46% for extratemporal resections.[9,14,19] Reasons might include our more cautious attitude toward resective surgery, the relatively short follow-up duration, and more common temporal lobe epilepsy with hippocampal sclerosis, which was thought to be one of the best fits for surgery.

There are several limitations to this study. Although our sample size reached 1088, this was still a single-center study, which may not fully reflect the whole situation of epilepsy MDT in China. Therefore, a larger multicenter cohort study or a national action is needed to confirm these results. Second, the minimum of our follow-up time was only 1 year, which may weaken our findings. We will continue our follow-up and solve this problem in the future. Third, our MDT is still at an early stage. Our assessment measures and treatment options are less than what is available in resource-rich countries. This will be improved, since our SPECT, SEEG, and deep brain stimulation will be put into use soon. Last but not least, we had to face the fact that we lacked skilled neuropsychological and neuropsychiatric members and related facilities. We could not professionally assess a patient's treatment compliance, neuropsychological or neuropsychiatric state, the quality of life, and so on. We will pay more attention to these aspects in our further work

and we are committed to cultivating our own professionals in these fields.

In conclusion, skilled team members, more optional assessment technologies, standard assessment protocol, and increased government and insurance interventions are important to improve our MDT for epilepsy management.[20]

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DISCLOSURES

None of the authors has any conflict of interest to disclose. We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

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REFERENCES

1. Ngugi AK, Kariuki SM, Bottomley C, et al. Incidence of epilepsy: a systematic review and meta-analysis. Neurology. 2011;77:1005–12.
2. Wang WZ, Wu JZ, Wang DS, et al. The prevalence and treatment gap in epilepsy in China: an ILAE/IBE/WHO study. Neurology. 2003;60:1544–5.
3. Kobau R, Zahran H, Thurman DJ, et al. Epilepsy surveillance among adults-19 states, behavioral risk factor surveillance system, 2005. Morb Mortal Wkly Rep. 2008;57:1–20.
4. Hong Z, Qu B, Wu XT, et al. Economic burden of epilepsy in a developing country: a retrospective cost analysis in China. Epilepsia. 2009;50:2192–8.
5. Johnson EK, Jones JE, Seidenberg M, et al. The relative impact of anxiety, depression, and clinical seizure features on health-related quality of life in epilepsy. Epilepsia. 2004;45:544–50.
6. ILAE Commission Report. The epidemiology of the epilepsies: future directions. International League Against Epilepsy. Epilepsia. 1997;38:614–8.
7. Schmidt D, Stavem K. Long-term seizure outcome of surgery versus no surgery for drug-resistant partial epilepsy: a review of controlled studies. Epilepsia. 2009;50:1301–9.
8. Kwan P, Arzimanoglou A, Berg AT, et al. Definition of drug resistant epilepsy: consensus proposal by the ad hoc Task Force of the ILAE Commission on Therapeutic Strategies. Epilepsia. 2010;51:1069–77.
9. Téllezzenteno JF, Dhar R, Wiebe S. Long-term seizure outcomes following epilepsy surgery: a systematic review and meta-analysis. Brain. 2005;128:1188.
10. Sylaja PN, Radhakrishnan K. Surgical management of epilepsy. Problems and pitfalls in developing countries. Epilepsia. 2003;44:48–50.
11. Radhakrishnan K. Challenges in the management of epilepsy in resource-poor countries. Nat Rev Neurol. 2009;5:323–30.
12. Berg AT, Berkovic SF, Brodie MJ, et al. Revised terminology and concepts for organization of seizures and epilepsies: report of the ILAE Commission on Classification and Terminology, 2005-2009. Epilepsia. 2010;51:676–85.
13. Engel Jr J, Van Ness PC, Rasmussen TB, et al. Outcome with respect to epileptic seizures. In: Surgical treatment of the epilepsies. Engel Jr J (ed). New York, NY: Raven Press, 1993; pp. 609–21.
14. Jobst BC, Cascino GD. Resective epilepsy surgery for drug-resistant focal epilepsy: a review. JAMA. 2015;313:285.
15. Andrade DM, Bassett AS, Bercovici E, et al. Epilepsy: transition from pediatric to adult care. Recommendations of the Ontario epilepsy implementation task force. Epilepsia. 2017;58:1502–17.
16. Haneef Z, Stern J, Dewar S, et al. Referral pattern for epilepsy surgery after evidence-based recommendations: a retrospective study. Neurology. 2010;75:699–704.
17. Asadi-Pooya AA, Sperling MR. Strategies for surgical treatment of epilepsies in developing countries. Epilepsia. 2008;49:381–5.
18. Wiebe S, et al. A randomized, controlled trial of surgery for temporal lobe epilepsy. NEJM. 2001;345:311–8.
19. Engel Jr J, Wiebe S, French J, et al. Practice parameter: temporal lobe and localized neocortical resections for epilepsy. Epilepsia. 2003;44:741–51.
20. Wu XT, Li L, Yan B, et al. How to effectively constraint the cost of presurgical evaluation for resective surgery in low-income population: clinically oriented opinions. Seizure. 2011;20:425–7.

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