Neurology Asia 2007; 12 (Supplement 1) : 33 – 35

The pediatric epilepsy surgery in China

Guoming LUAN, Yunlin LI

Department of Neurosurgery, Fu-Xin Hospital affiliated to the Capital Medical University; and Epilepsy Center, San-Bo Brain Science Institute, Beijing, China

Abstract

There is rapid growth of pediatric surgery service in China in the recent years. A survey by the China Association Against Epilepsy undertaken in June 2006 on the major cities in different parts of the country showed a dramatic increase particularly in years 2004 and 2006. Surgery for temporal lobe epilepsy accounts for half of the operation. Surgery has an important role in the treatment of drug resistant pediatric epilepsy. With large population and vast geographical spread, it is important to further develop pediatric epilepsy surgery service in China

THE INCREASING TREND OF PEDIATRIC EPILEPSY SURGERY IN CHINA

The prevalence of pediatric epilepsy in China is about 3.3 to 6.8 per thousand populations, and the yearly incidence is 151 per 100,000.[1] In contrast to adult epilepsy, pediatric epilepsy has higher incidence. Yet pediatric epilepsy surgery in China develops later than that in the adult population.[2-4] To-date, there is no definitive data on pediatric epilepsy surgery in China. There are also few publications in the national or international journals on this important subject.[5,6] With the establishment of China Association Against Epilepsy, a survey sponsored by the Association in major cities of China on current status of pediatric epilepsy surgery was undertaken in June 2006. The information was obtained mainly through operative schedules. The data obtained were the number of surgery every year, types of surgery including temporal or extra-temporal lobe epilepsies, and surgery in special pediatric syndrome, such as West syndrome, Lennox-Gastaut syndrome, Rasmussen's encephalitis and Sturge-Weber syndrome. The annual pediatric surgery conducted till June 2006 is as shown in Table 1. China is a big country with 32 provinces and many large cities. However, few epilepsy surgeries have been reported in most of the economically less developed areas[3], the statistics from mostly the 5 major cities in different areas (Beijing, Tianjin, Chongqing, Shanghai, and Guangzhou) can approximately represent the current situation of pediatric epilepsy surgery in China.

An increasing trend can be seen from the Table 1. At and before year 2000, there were only 286 case of pediatric epilepsy surgery, and the number approximately equals to that of year 2001. By the year 2004, there was doubling of the number of pediatric epilepsy surgery. The number doubles again in the year 2006. Till date,

Table 1: The annual pediatric epilepsy surgery in 5 major cities in China

Year City	2000 and before*	2001	2002	2003	2004	2005	Up to June 2006	Total
Beijing	41	89	108	226	221	216	232	1,133
Tianjin	11	5	5	10	9	14	11	58
Chongqing	67	13	11	22	26	37	37	213
Shanghai	17	18	21	26	24	22	22	150
Guangzhou	105	109	99	78	81	74	44	590
Others	45	27	59	86	110	153	68	548
Total	**286**	**261**	**303**	**268**	**471**	**516**	**414**	**2,692**

*The number for year 2000 and before is an estimate only.

about 2,700 pediatric epilepsy patients have been surgically treated in China.

INDICATIONS FOR EPILEPSY SURGERY IN CHINA

The indications for pediatric epilepsy surgery conducted in China are as in Table 2. As shown, temporal lobe epilepsy (TLE) patients were the most important indication for pediatric surgery, accounting for close to half (49%) of the surgeries.[6]

The non-temporal lobe epilepsies accounted for 41%, and special pediatric syndrome accounted for 175 patients (6.5%).

SAN-BO BRAIN SCIENCE INSTITUTE, BEIJING

The Epilepsy Center of the San-Bo Brain Science Institute is a newly established comprehensive epilepsy care center in Beijing. It is well known in China for its professional service and academic

Table 2: The indication for pediatric epilepsy surgery in China

	TLE	N-TLE	Special epilepsy syndrome				Others	Total
			West	LGS	RE	SWS		
Beijing	593	436	20	12	10	7	55	1133
Shanghai	105	36	0	9	0	0	0	150
Tianjin	15	43	0	0	0	0	0	58
Chongqing	95	102	3	11	2	0	0	213
Guangzhou	255	249	39	30	10	2	5	590
Others	265	230	8	10	0	5	30	548
Total	**1,328**	**1,096**	**67**	**72**	**22**	**14**	**90**	**2,692**

TLE: temporal lobe epilepsy; N-TLE: non-temporal lobe epilepsy; West: West syndrome, LGS: Lennox-Gastaut syndrome; RE: Rasmussen's encephalitis; SWS: Sturge-Weber syndrome

Table 3: Pediatric epilepsy surgery in San-Bo Epilepsy Center

Types of surgery	No	No of BEFC
Temporal lobectomy	36	10
Tailored resection of temporal neocortex: lesion	8	8
non-lesion	1	1
Selectively amygdalo-hippocampectomy	4	
Nontemporal lobectomy: lesion	52	52
non-lesion	2	2
Corpus collosotomy	31	18
Hemispherectomy	7	0
Muti-lobectomy	2	2
Vagus nerve stimulation	3	0
Stereotactic therapy	1	0
Total	**147**	**93**

BEFC: Bipolar electro-coagulation on functional cortex

research. Established in April 2004, about 650 of 2000 epilepsy patients have been treated by surgery till date. Out of these were 147 patients with pediatric epilepsy surgery. There is systematic post-operative follow-up of the patients. The results of the surgery are similar to that of the adults with 76.3% achieving Engel class I and II (108/147). The neuropsychological outcome is better than the adult patients. The types of surgery performed are shown in Table 3.

Bipolar electro-coagulation on functional cortexes (BEFC) can be used when eloquent neocortex has significantly spikes. It can be applied in eloquent areas in children with similar effect as multiple subdural transection (MST).[7] Because it is effective, safe and simple to apply, it is rapidly gaining popularity in China.

FURTHER DEVELOPMENT OF PEDIATRIC EPILEPSY SURGERY IN CHINA

Surgery has an important role in the treatment of drug resistant pediatric epilepsy. Once the etiology of the epilepsy and the resistance to drug is established, the patients should be subjected to assessment for surgery. Any delay will result in the tolls of continuing frequent seizures, the cost and side effects from the multiple antiepileptic drugs.[6] With large population and vast geographical spread, it is important to further develop the pediatric epilepsy surgery service in China.

REFERENCES

1. Qing J. The long-term prognosis of pediatric epilepsy. *Chin J Appl Pediatri* 2006; 21(3): 226-7.
2. Tan QF, Wu CHY, Li L, *et al*. Epilepsy surgery. Beijing: The people's publisher. 2006
3. Tan QF, Wu CHY, Liu YG, *et al*. The stereotactic and functional neurosurgery in China. *Chin J Stereotact Funct Neurosurg* 2004; 17(1): 1-8.
4. Zhao YD, Zhao YL. Neurosurgery in the People's Republic of China: A century's review. *J Neurosurgery* 2002; 51: 468-77.
5. Jiang CH, Xu B. Pediatric epilepsy surgery. *Chin J Appl Pediatri* 1999; 14(1) 23.
6. Yu JSH, Li L. Epilepsy surgery in childhood. *Chin J Stereotact Funct Neurosurg* 2002; 15(1): 50-3.
7. Luan GM, Zhang WL, Yan L, *et al*. A pilot study of bipolar coagulation on functional cortexes for treatment of epilepsy. *Chin J Neurosurg* 1999; 15(6): 329-32.