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Experience of Diagnosis and Treatment of Epilepsy as the First Symptom of the Limbic System Glioma

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ABSTRACT Objective: 1.To investigate the early diagnosis and surgical treatment of seizure which is the first symptom of glioma. 2.To explore the influence of different surgical methods for the early treatment and long-term outcome. **Methods:** 31 patients, from August 2011 to September 2012, were studied with retrospectively analysis. **Results:** Pathological examination confirmed WHO grade Ⅰ astrocytoma 2 Cases, astrocytoma WHO Ⅰ-Ⅱ 4 cases, astrocytoma WHO grade Ⅱ 12 cases, WHO Ⅱ level oligodendroglial tumors 7 cases, WHO Ⅱ-Ⅲ, astrocytoma four cases, gliosis only two cases, after surgery were given anti-epileptic drugs treatment. **Conclusion:** 1. Clear diagnosis of low-grade gliomas seizure as the first symptom, and more attention should be paid to the differential diagnosis. 2.Early microsurgical treatment can effectively control seizures. 3.Antiepileptic drugs can reduce the onset of symptoms of epilepsy. 4.Take the corresponding operation method according to the tumor site, as far as possible all cut the tumor tissue.

Key words: Epilepsy; Limbic system glioma; Astrocytic glioma

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Introduction

Gliomas are the most common types of central nervous system neoplasms,originating from glia, the supporting cells of the central nervous system, accounting for more than 50% of all primary intracranial tumors [1]. The most common form of glioma in human is astrocytoma. According to the World Health Organization (WHO) classification[1], astrocytoma consists of pilocytic astrocytoma (grade I), astrocytoma (grade II), anaplastic astrocytoma (grade III), and glioblastoma multiforme (grade IV). Grade I and grade II known as low grade gliomas. Low-grade gliomas(LGGs) of the limbic system occurs in young adults, the lesions were more located on the left side, the main clinical manifestations of seizures as the first symptom, or will associated with neuropsychiatric disorders, headache, vomiting, aphasia, such as performance. Low-grade gliomas (LGGs) are a heterogeneous group of indolent tumors that comprise almost 40% of central nervous system tumors in childhood[2]. These tumors typically involve midline structures such as the brainstem, hypothalamus, and optic pathway,in addition to their most common location, the cerebellum. Low-grade gliomas were until recently viewed as benign because patients could live with them for years, so they were "treated" with a wait-and-watch approach [3]. Now, however, grade II gliomas are also viewed as malignant, because inevitably they will become anaplastic and kill the patient [4]. Early resection has been shown to increase survival time over waiting-and-watching [5]. Complete resection of these tumors provides excellent long-term survival; however, recurrence or progression frequently occurs and may necessitate adjuvant therapies, including radiation therapy (RT),chemotherapy, or further surgery.

Seizures are common in diffuse gliomas, occurring in 50-90% of low-grade astrocytoma patients and in 20-50% of glioblastoma Patients [6]. The majority of patients (65-90%) with LGGs experience symptomatic seizures at disease onset [7]. Seizures occur in about half of children and 35 to 40 percent of adults with supratentorial tumors[8]. Known risk factors for seizures in patients with tumors include low-grade tumors (rather than high grade), cortical involvement,and either a perirolandic or temporal lobe location[9]. Seizures are usually the first symptom in patients with low-grade gliomas, especially oligodendrogliomas [8]. Brain neoplasms account for 10 to 30 percent of adult epilepsy surgery candidates[10].

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1 Materials and methods

1.1 Clinical data

General information: 31 patients, of which12 patients were females, 19 were males, and aged 27-48 years, with mean age of 37.5 years old.

1.2 Clinical manifestations

Patients had epilepsy as the first symptom,with or without headache admission. History of epilepsy 5d-3y, 8 patients had a diagnosis of idiopathic epilepsy and had formal antiepileptic drug treatment. According to the imaging and postoperative pathological diagnosis: 5 cases in the frontal lobe, the temporal lobe 13 cases, 2 cases frontotemporal mixed, insular cortex 1 case, temporal lobe and insular cortex mixed 10 patients (9 cases close to the basal ganglia).

1.3 Surgery

All patients were given conventional microsurgical treatment. Surgical procedures under the protection of the corresponding tissue blood vessels, as far as possible to remove the tumor. The postoperative were given antiepileptic drugs to prevent further attack, in addition to two cases gliosis cases, while the remaining patients underwent radiotherapy treatment.

2 Results

Of 31 patients, 21 cases were total remove, 10 cases were partial cut.

Surgical excision for pathological examination, diagnosed as WHO Ⅰ grade astrocytoma 2 cases, WHO I - II grade astrocytomas 4 cases, WHO II grade astrocytoma 12 cases, WHO Ⅱ

grade oligodendrocytes tumors 7, astrocytoma WHO II - III 4, only gliosis 2 cases. After surgery were given anti-epileptic drugs (sodium valproate) treatment. After surgery, 2 patients appeared the language barrier, 3 patients appeared paralysis and the rest were clinically cured.

Twelve months after surgery, 31 patients were followed.23 patients (74%) completely seizure free (Engel Class I) postoperatively. 10% had rare seizures (Engel Class II), 6% had meaningful seizure improvement (Engel Class III), and 10% had worsening seizures (Engel Class IV).

Table 1 Follow-up 12 months

Engel class	Gross remove	Partial remove	Total
	21	10	31(100%)
I	17	6	23(74%)
II	2	1	3(10%)
III	2	0	2(6%)
IV	0	3	3(10%)

3 Discussion

Low-grade glioma of the limbic system is common in intracranial central nervous system tumors and Yasargil[11] of 177 patients with gliomas of the limbic system, which accounted for 56% of low-grade gliomas. 1878 French scholar Broca would mammals brain lobe around the brainstem called big limbic lobe.Later,with the concept of the limbic gradually expanding, the limbic cortical structures (orbital frontal gyrus, insular cortex and the temporal lobe), as well as some of the functionality similar structures, were together known as the limbic system. The cortex of the limbic system was the oldest part of the process of biological evolution, including the ancient phylogenetic the gluconeogenesis cortex (such as the hippocampus and dentate gyrus of the ancient cortex, septal area and amygdala structure) and intermediate cortex (including the orbitofrontal cortex the rear of the insular cortex, temporal pole, cingulate gyrus, etc.)[13], which belonged to the original cortex.With the process of evolution of species development and new cortical area increasing, the original cortical area occupied less, only 4% of all human cortex, part of which is squeezed into a smaller area of the bottom surface of the brain, the other part of which is involved in the lateral ventricle. The blood supply to both by perforating artery and pial arterial supply and venous return both injected into the brain and superficial veins, also injected into the vein of the deep brain [14]. Furthermore, low-grade gliomas of the limbic system the blood supply is not abundant. FiIiminoff found that the tumor originated in the limbic system in the phylogenetic certain affinity with the original cortex[15].

Low-grade gliomas of the limbic system more common in young adults, the lesions were located in the left side. Clinical manifestations were seizures as the first symptom, or that associated with neuropsychiatric disorders, headache, vomiting, aphasia. There are two mechanisms of pathogenesis of epilepsy. The first mechanism involves seizures arising from a damaged hippocampus and hippocampal sclerosis being an almost pathognomonic substrate of hippocampal epilepsy[16]. Its focal nature could support a more limited resection such as a selective hippocampectomy[17] or posterior medial temporal resection [18] in affected patients. The second mechanism is that of complex partial seizures caused by an extrahippocampal pathology. The seizure would secondarily spread to the hippocampus, which would amplify and propagate abnormal epileptiform discharges. Gliomas is such lesions, resection of which could produce a good surgical outcome without additional resection[16,19].

Due to the unique anatomical and tumor properties of low-grade gliomas of the limbic system, cancer has larger when diagnosis is made. The CT scan showed low density and no reinforcement or the reinforcement is not obvious.High-resolution magnetic resonance imaging (MRI) T1WI low signal,T2WI showed high signal, no obvious reinforcement.It can show the range of tumor spread, but also show that the tumor with middle cerebral artery, internal capsule, brain stem, saddle structure relations, and confirm the origin of the tumor, judgment surgical approach and the scope of tumor removed [12].

The diagnosis is generally based on clinical manifestations and imaging data, but identify cases with cerebral infarction, cerebral vascular malformations and lateral fissure arachnoid cyst.(1) Massive cerebral infarction: Low-grade gliomas slow onset, longer duration, with headache, epilepsy as the main symptoms, MRI scan showed around the sylvian fissure long T1,T2 abnormal signal area, and a small number of cases seen cystic in its generally not involving the temporal lobe cortical surface area, relatively mild mass effect. The enhanced scan without significantly enhanced. The massive cerebral infarction in patients with acute onset, short course, the main clinical manifestations of the limb dysfunction.3 days to 1 week,due to swelling of the brain tissue of the infarcted area, there may be headache, nausea, vomiting and other symptoms. MRI showed the sylvian large flake long T1,T2 abnormal signal, the fan-shaped distribution, extended to the temporal cortex from the white matter regions, there may be significant mass effect enhanced scan lesion visible gyri-like enhancement.(2) Cerebral vascular malformations: both lesions can produce long T1,T2 abnormal signal and signs of calcification. And the former has significant mass effect, the latter often due to "steal phenomenon" negative mass and specific signs - blood flow void phenomenon.(3) Lateral fissure arachnoid cyst: lateral fissure arachnoid cyst may also have seizures, when difficult to distinguish, arachnoid cysts can rely on the cerebrospinal fluid contrast agent line ventriculography were identified. In this case, there are two cases of initial imaging diagnosis of low-grade gliomas, postoperative pathological diagnosis of the gliosis intracranial space-occupying lesions, strict attention to the patient's condition changes, whether it should be surgical treatment, should be further explored.

Tumor resection and seizure of control is the main treatment of low grade glioma. Epileptic prognosis plays an important role in evaluating their postoperative quality of life. Most patients achieve good seizure control after surgery. However some still have seizures in spite of similar histology, tumor location and treatment. Early excision of the lesion is the main method, but operation method is still controversial.Some people think that only the tumor lesion resection, some people think should be in the brain EEG monitoring tumor lesions and the epileptic focus resection. In the former, Fried [23] reported 65 cases of glioma patients with refractory epilepsy, 41 cases (63%) tumors in the temporal lobe, simple excision of the tumor, followed up for more than 1 year after surgery, 82% of patients with epilepsy disappear. Yang suggested

that early intervention of less than 3 years from the onset of symptoms or seizure to surgical intervention is significantly associated with improved clinical seizure control [20]. Some study think partial cut and postoperative radiotherapy can obtain good effect[21]; there also is research to prove that postoperative radiotherapy has a little effect on overall survival[22].

In short, based on tumor growth patterns and blood supply, the most people advocate that whenever possible, efforts should be made to completely resect these tumors. Patients after the operation were given antiepileptic drugs can prevent and treat the attack again, and then radiation therapy and chemotherapy to try to eliminate residual tumor cells. This can achieve better results. Epilepsy patients after surgery and gamma knife treatment, can reduce the dosage of antiepileptic drugs appropriately, but still need to be long-term, regular medication in order to consolidate curative effect, and regularly review EEG, blood drug concentration, in order to know the treatment situation.

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癫痫为首发症状的边缘系统胶质瘤的诊断治疗体会

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摘要 目的:①.探讨以癫痫为首发症状的胶质瘤的早期诊断和治疗。②了解不同手术方式对疾病的治疗和长期预后的影响。**方法:**对从2011年8月到2012年9月的31例病人进行回顾性研究分析。**结果:**病理确诊的WHOⅠ级星形细胞瘤2例,WHOⅠ－Ⅱ级的星形细胞瘤的4例,WHOⅡ级的星形细胞瘤12例,WHOⅡ级少突胶质细胞瘤的7例,WHOⅡ－Ⅲ的星形细胞瘤4例,仅有胶质细胞增生的2例。**结论:**①以癫痫为首发症状的低级别胶质瘤应诊断明确,注意鉴别诊断。②早期显微手术治疗控制癫痫症状效果较好。③术后给予抗癫痫药物可预防和较少再发作。④根据手术部位,尽可能的全切肿瘤。

关键词:癫痫;边缘系统胶质瘤;星形细胞胶质瘤

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