Review of the diagnosis and clinical features of multiple sclerosis in China

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Abstract: This review focused on the diagnosis and clinical features of multiple sclerosis (MS) in China. We have identified the published researching information from 1976 to 2008 in China. The key issues related to the diagnosis and clinical features of MS in China were summarized. The first patient with MS in China was reported in 1926 from Xiehe hospital. Case reports on MS has been increasing during recent decades. Almost all the patients with MS were confirmed by the McDonald criteria (1977) before 1984. After the year of 1992, even to this day, the Poser criteria were widely used in China. Although the new diagnostic criteria, McDonald criteria (2001), were presented in 2001, only few papers published in Chinese were reported. The most frequent initial symptoms or signs of the patients with MS were optic nerve, motor weakness and sensory symptoms. The most frequent location of MS lesions over the course was found to be the spinal cord, followed by the cerebrum and optic nerves. Almost all patients had been treated with corticosteroids. This review supported previous observations in Chinese patients with MS. However, further studies are needed to understand epidemiologic features of MS in China.

Keywords: multiple sclerosis; diagnosis; clinical features; China

1 Introduction

Multiple sclerosis (MS) is an inflammatory and demyelinating disease in the central nervous system (CNS)^[1]. The aetiology and pathogenesis of MS is not very clear^[2-4]. China is a country with a low prevalence rate of MS. The first patient with MS in China was reported in 1926 from Xiehe hospital. The patient presented visual impairment as initial symptom at her 21-year-old and died after the recurrence of the disease^[5]. After that, there were several cases reported on MS patients from hospitals. However, the number of cases reported was relatively small. In total, there were only 15

cases with MS reported from 1957 to 1966^[6].

In 1979, Zhao BX^[7] and Zhao F^[8] reported 70 cases and 25 cases of patients with MS, respectively. One hundred and forty-one cases were reported by Xu J and Hu WM in 1981^[9]. After the year of 1981, the case reports on MS had been increased. In this present study, we reviewed published MS-related literatures (in English or Chinese) on the development of MS in China.

2 Diagnostic criteria for MS

Before 1984, the patients with MS were confirmed according to the McDonald criteria (1977). The patients fulfilled the following conditions were classified as clinical definite MS: (1) According to the symptoms and signs, there are two or more lesions in the CNS which were most frequent in MS, such as the optic nerve, spinal cord, and brain stem; (2) The course of disease were remission and relapse or were stepped progress; (3) Other causes were ruled out, such as cancer, stroke, cervical spondylosis and cerebellar degeneration. Several re-

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Article ID: 1673-7067(2009)01-0038-05
CLC number: Q42
Document code: A
Received date: 2008-12-12

searches were carried on according to the McDonald criteria (1977)^[6-8,10].

In 1984, Zhao BX analyzed 256 patients with MS according to the diagnosis criteria made by Rose in 1976^[11]. The patients included 100 cases in Beijing, 94 cases in Changchun, Liaoning Province and 62 cases in Harbin, Heilongjiang Province, from 1949 to 1981. However the Ross criteria were not widely used in China.

In 1983, Poser *et al.* introduced the diagnostic criteria for MS which based on clinical characteristic, paraclinical examinations (evoked potential) and findings in the analysis of cerebrospinal fluid (CSF) like oligoclonal bands or increased immunoglobulin G (IgG). Based on the degree of the dissemination, the criteria classified patients into “clinically definite MS”, “laboratory supported definite MS”, “clinically probable MS”, “laboratory supported probable MS” and “not MS”^[12].

After the year of 1992, most of the reports on MS in China were based on the Poser criteria for diagnosis of MS. For example, Gao ZL reported 130 cases in Anhui Province^[13] and Li HP report 46 cases in Beijing^[14] in 1995, respectively. However during this time, there were still a few patients were diagnosed by the McDonald criteria (1977), such as the report of Zheng JZ in 1990^[15].

With the development of magnetic resonance imaging (MRI) in the recent 20 years, the value of MRI on the diagnosis of MS has become more and more important, especially the spinal cord MRI. It conduces to earlier diagnosis by enabling visualization of lesions in the brain that are clinically silent. In 2001, the International Panel on the Diagnosis of Multiple Sclerosis presented new diagnostic criteria for MS which is the McDonald criteria (2001)^[16]. It formally incorporated MRI into the previous diagnostic algorithm. At the same time the criteria defined categories as “MS”, “possible MS” and “not MS”, depending on the criteria they satisfy.

An information search using the key word “multiple sclerosis” was performed, covering the period from 2001 to 2008. Few papers in Chinese were reported on the MS patients diagnosed by the McDonald criteria (2001)^[17-19]. However most of the other researches were still carried on according to the Poser criteria^[20]. In one word, there existed

hysteresis in the use of diagnostic criteria for the diagnosis of MS in China.

There were several researches on the comparison of the diagnostic criteria between McDonald’s and Poser’s in China. Liu GZ found Poser criteria were superior to McDonald criteria in the validity of the diagnosis for MS. But it needed improving or used in a flexible way in defining the duration of progressive MS^[21]. However, the other study demonstrated the case numbers out of accord with McDonald criteria and Poser criteria were equal and the consistency of the two diagnostic criteria was 95%^[22].

3 Clinical features of MS

We reviewed published papers from 1979 to 2008. Female preponderance were reported in all series except the reports by LI HP and Xu Q^[18,23,24]. The ratio of male to female ranged from 1:1.04 to approximately 1:1.8. An unusually lower male to female ratio of 1:9.6 was reported from Hong Kong in 2002^[25]. The mean age of MS onset across China range from 27 to 38 years old. For most patients, disease onset was acute (1 week) or subacute (1 week to 1 month). It has been reported that the peak time for the onset was between April to July^[11].

The prominence of optospinal symptoms involvement in Chinese population has been recognized. Almost all the papers demonstrated the most frequent initial symptoms or signs of the patients with MS were optic nerve, motor weakness and sensory symptoms.

Features of Asian MS patients are clinically, radiologically and immunologically distinct from European or North American MS patients. Many authors have divided MS into two forms: optospinal MS (OSMS) and conventional MS (CMS), based on their different clinical phenotypes. OSMS is sometimes referred to as Asian-type MS, which is perceived to be common in China. Majority of the reports showed that the most frequent location of MS lesions over the course was found to be the spinal cord, and followed by the cerebrum and optic nerves, according to the clinical features and signs, combined with MRI examination. Only one literature reported by Guo YP^[26] found that: the most frequent location of MS lesions was spinal cord, followed by the cerebrum and

Table 1 Characteristics of MS in China

Area and reference	Cases	Diagnostic criteria	Female-to-male ratio	Malignant forms	Age at onset (years)	Initial symptom	Locations of MS lesions	Therapy	Mortality
Taiwan 1976 ^[28]	25	-	3.20	Acute	32.1	Optic nerve	Optic nerve, spinal cord	-	-
Beijing 1979 ^[26]	10	Pathological	2.3	Acute or subacute	27	weakness	Cerebellum, spinal cord, brain stem	Corticosteroids	-
Beijing 1979 ^[10]	70	McDonald(1977)	1.8	Acute or subacute	30.6	Optic nerve	Spinal cord, optic nerve, brain stem	Corticosteroids	12.9%
Beijing and Harbin 1981 ^[9]	141	McDonald(1977)	1.27	Chronic	31.3	Optic nerve	Spinal cord, optic nerve, brain stem	Corticosteroids	6.3%
Beijing, Changchun and Harbin 1983 ^[11]	256	Rose	1.18	Acute or subacute	29.1	Optic nerve	Spinal cord, optic nerve	Corticosteroids, immunosuppressant, ACTH	7.4%
Harbin and Nanjing 1984 ^[6]	151	McDonald(1977)	1.04	Acute or subacute	27.1	Optic nerve	Spinal cord, brain stem, cerebrum	Corticosteroids	6.6%
Anhui Province 1995 ^[9]	130	Poser	1.32	Subacute	30.7	-	Optic nerve, spinal cord, cerebrum	-	-
Hong Kong 2002 ^[25]	53	Poser	9.60	-	29.4	Numbness, weakness	Optic nerve, spinal cord	Immunosuppressant, immunoglobulin, interferon corticosteroids	-
Shaanxi Province 2007 ^[17]	32	McDonald(2001)	1.67	-	33.4	Numbness, weakness	Spinal cord, optic nerve, brain stem	Corticosteroids	-
Shanghai 2008 ^[18]	249	McDonald(2001)	1.4	-	38.3	optic nerve	Spinal cord, cerebrum, optic nerve	Corticosteroids, immunosuppressant, immunoglobulin, interferon	-

-. no available data.

optic nerves based on the clinical manifestations. However, according to the pathological examination, the most frequent location of lesions involved changed to be brain, spinal cord and brain stem in order. Cerebellum involvement was both less common at onset and was relatively less frequent during the course of illness. The characteristic of MS in China was presented in Table 1.

Zhao BX^[11] reported that elevated IgG index were seen in 11/14 and oligoclonal band in 5/10 patients with MS, which is

the first report in China. The positive rate of IgG index was more common than results of other subsequent researches. The positive rate of oligoclonal band reported by Zhao BX^[11] was similar with the result of Cheng *et al.* (about 50%)^[18,23]. But the result reported by Liu HY (27.55%)^[19] was relatively lower.

Almost all patients in China had been treated with corticosteroids, and only few patients were treated with interferon, immunoglobulin or Immunosuppressant together

with corticosteroids^[18,25].

4 Summary

We present a systematic and comprehensive review of the diagnostic criteria and clinical presentation of MS throughout China. Among Asian people, MS was characterized by “severe involvement of the visual system at onset and during the entire clinical course, more common occurrence of optic and spinal cord involvement, relatively rapid progression^{[27]”}. Our review supported such observations in Chinese.

However, our information was greatly limited by the weakness of available data and the extreme variability of ascertainment bias, which could influence clinical features. The data were also limited by a lot of influencing factors, such as variable quality of the different studies, sizes of research sample, diagnostic criteria and variable reporting methods. Most of the studies we reviewed were hospital-based case series, rather than population-based studies. The factors mentioned above limited the scope of our review. Further studies, such as larger epidemiological and prospective studies, are needed so that we can understand the epidemiologic features of MS in China.

Acknowledgment: We thank Prof. Qi CHENG from Ruijin Hospital, Medical School of Shanghai Jiao Tong University for her direction and review of this article.

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中国多发性硬化诊断标准及临床特征研究进展

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摘要: 本文对中国多发性硬化诊断标准的使用及疾病特征进行综述。收集1976~2008年期间关于中国多发性硬化疾病研究的文献, 分析其中的诊断信息及临床特征。中国首例多发性硬化患者于1926年在协和医院诊断之后的几十年, 关于多发性硬化的报道日益增多。1984年前, 几乎所有患者的诊断均依据 McDonald 诊断标准(1977)。1992年后至今, Poser 诊断标准在国内得到了广泛的应用。尽管2001年推出新的诊断标准 McDonald criteria (2001), 但以该诊断确诊多发性硬化的报道并不多。可见国内在多发性硬化诊断中存在诊断标准滞后的现象。中国多发性硬化患者的首发症状以视神经受累最常见, 其次为肢体无力和感觉障碍。病程中病变最常累及的部位为脊髓, 其次为大脑和视神经。大多数患者均接受过皮质激素的治疗。本文支持了以往关于中国多发性硬化疾病的研究结果。
关键词: 多发性硬化; 诊断; 临床特征; 中国

Erratum to Vol. 24, No. 4, 2008

Page	Line from bottom	Error	Correction
230	11	魏征	魏峥

勘误: 在2008年第24卷第4期第230页倒数第11行的中文作者名“魏征”, 改为“魏峥”, 特此更正。