Guillain-Barre Syndrome Complicated on Postoperation on Renal Carcinoma and Meningioma

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To the Editor: Guillain-Barre syndrome (GBS) is an autoimmune disease on the injury of peripheral nerve myelin proteins or axon, of which the acute motor axonal neuropathy (AMAN) as a subtype is of infrequent and an extremely low incidence after the operation. One case was reported on the successful treatment of severe GBS (AMAN) on postoperation of renal carcinoma and meningioma, aiming to provide successful treatment experience in such severe cases.

A 65-year-old female was initially diagnosed with cerebellar meningioma in admission on December 8, 2016, at the same time, she was diagnosed left renal cancer first taken radical resection of renal carcinoma and pathology showed clear-cell carcinoma, Class II. Magnetic resonance imaging on brain suggested an occupied lesion on the left cerebellar hemisphere with the size of 1.9 cm × 1.9 cm × 2.6 cm and considered a meningioma, then, the patient was performed left cerebellar meningioma resection, and pathology showed the fibrous meningioma (WHO Class I). On the 8th day after surgery, the patient was considered upper respiratory tract infection, and 2 days later, she suffered a rapid double upper limbs weakness, but normal feeling with negative head computed tomography examination. Hoarseness together with gradual weak muscle strength proximal limbs (Grade II) was considered a possibility of GBS and further the subtype of acute inflammatory demyelinating polyneuropathies (AIDP). On the 11th day, she was transferred to the Surgical Intensive Care Unit for machine ventilation when respiratory muscle paralysis and sitting-like breathing.

The ventilator paralysis were aggravated on the 12th day, and intravenous gamma globulin (IVIG) with the dose of 0.4 g·kg^{-1}·d^{-1} was recommended for 5 days, then the limbs strength slightly improved 3 days later. Cerebrospinal fluid (CSF) suggested protein-cell separation and positive shows of Pandy test. Then, linezolid was used for the prevention of anti-infection as the patient was of unexplained fever with a climate of 39.9°C on the 18th to 22nd day and sputum culture showed *Stenotrophomonas maltophilia*. She was then suffered from bloating and incomplete intestinal obstruction on 23rd day and unexplained declined blood pressure added increased heart rate to depend on norepinephrine.

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The serum sampled suggested existence of the IgM and IgG antibody about ganglioside antibody GM1 and nothing on Ri, Yo, and Hu from serum and CSF. Consequently, AMAN, a rare subtype of GBS, was more likely to be considered and plasma (PE) or the second use of IVIG was recommended, but family members refused to exchange by plasma. Therefore, reuse of IVIG on the 28th day for 5 days performed, but the effect was not significant.

On the 7th and 8th week postoperatively, antibiotics replacement was made since blood culture showed *Acinetobacter baumannii* and *Enterobacter cloacae*, respectively. The prone position drainage 2 to 4 times 1 day was first used from 9th week on for serious atelectasis which was unsatisfied by daily bronchoscopy suction and chest radiograph showed improvement on left lung brightness, atelectasis, and pleural effusion on the 8th week. Then, the frequency of posture drainage was every other day 5 days later because of better lung recruitment. She obtained the gradual improved respiratory function and even accepted appropriate off-machine exercise after 3 months, which made it feasible to undergo electromyography (EMG) examination showed motor fiber was completely involved. The suspending on machine ventilation made it possible for the next rehabilitation training 4 months later and was eventually discharged for further with grade 4 of limb strength. Then, the patient can get up self-depended and support stand in and walk for 5–10 m and is not many restrictions on using spoon to the past follow-up 7 months later.

GBS is a kind of acute immune-mediated inflammatory peripheral neuropathy. It includes AIDP, AMAN, acute motor-sensory axonal neuropathy (AMSAN), Miller Fisher syndrome, acute panautonomic neuropathy and acute sensory neuropathy, and other subtypes. As the classical GBS, the pathology of AIDP

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is monocyte-macrophage infiltration and directly attacks myelin protein with intact construction. The titer of ganglioside antibodies (GM1, GM1b, GD1a, and GaNac- GD1a) in the serum of AMAN patients is significantly increased.[1] The prodromal symptoms of GBS are diarrhea and upper respiratory tract infections. It shows acute progressive symmetry of limb paralysis more in proximal, tendon reflexes weakened or disappeared with sensory disturbances, even a corresponding dysfunction with brain and autonomic nerve in some patients.[2]

The GBS diagnosis and treatment guidelines of China drafted in 2008 by the Chinese Medical Association neurology branch has a guiding role in the diagnosis of domestic GBS.[2] The diagnosis of GBS is mainly based on typical clinical symptoms and signs, CSF examination and EMG. The diagnostic criteria of AMAN and AMSAN refer to AIDP, of which the feature of AMAN suggests a pure motor nerve dysfunction and significant damage on the motor axon. This patient suffered upper respiratory tract infection with rapid progress after 1 week postoperatively, symmetrical limbs muscle weakness, respiratory muscle paralysis, autonomic nervous dysfunction, and CSF are considered the simple motor axonal nerve damage and consequently, a diagnosis of AMAN is approximately confirmed.

Pithadia and Kakadia[3] pointed out infection and surgery may induce GBS and *Campylobacter jejuni* is the main pathogen which can increase monosialotetrahexosyl-ganglioside antibody to induce ganglioside-associated GBS, as well as some reports on the induction of GBS when using monosialoglycolic ganglioside sodium injection postoperatively. It is the surgery stress that may be considered as an important incentive of GBS she was performed two tumor-related surgeries in the short term. The positive result of GM1 antibody prompted the GBS ganglioside-related AMAN, positive IgM and IgG was considered the application of ganglioside and blood-brain barrier may be damaged after meningioma surgery which eased the drug enter the CSF circulation and induced lesions. Therefore, the etiology on this GBS is of high confident of administrating ganglioside drugs.

There are reports on respiratory muscle paralysis as the main symptom of GBS, Erasmus GBS scores (EGOS) model mentioned by Walgaard *et al*.[4] in 2010 can predict respiratory insufficiency of GBS patients within 1 week and a revised, modified EGOS (mEGOS) model in 2011 can effectively predict patient's condition with a period of 6 months after diagnosis. One case that intestinal obstruction is as the first manifestations of GBS indicates that paralytic ileus in patients with GBS may be associated with a sympathetic and parasympathetic bowel dysfunction and mononuclear cell infiltration and extensive demyelination surrounding sympathetic and parasympathetic nervous system has been demonstrated pathologically.

Autonomic nerve dysfunction such as blood pressure fluctuations and arrhythmia can be caused in GBS which about 3–10% of GBS patients would die of. That it is usually of no omen on severe autonomic nerve dysfunction must be successively monitored, the same as the management of the respiratory tract and nutrition support. This patient was treated timely with position drainage of high efficacy and respiratory management on anti-infection.

Early use of IVIG or PE but not combination was repeatedly recommended by the Guidance for the Diagnosis and Treatment of Chinese GBS and foreign scholars, but recently some new ideas, to some extent, of significance on GBS treatment emerged.[4] A clinical study of the dose-response effects of secondary administration of IVIG is currently being conducted internationally in patients with poor prognosis of GBS which are evaluated according to the mEGOS model, which pointed out that conventionally a second dose of IVIG may be 2 g/kg for 2–5 days according to the clinical experience as the patients' symptom seems improved.[5] Some new drugs such as eculizumab and individualized treatment of IVIG are being used, especially for those of poor prognosis. However, the general treatment program on GBS is still IVIG and PE, and a curious judgment of prognosis is essential to make a reasonable plan.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s)/patient's guardians has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients/patient's guardians understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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