Acute motor-sensory axonal neuropathy and *Helicobacter pylori* infections

To The Editor: We read with great interest the article by Miscusi et al.11 (Miscusi M, Currà A, Della Rocca C, et al: Acute motor-sensory axonal neuropathy after cervical spine surgery. Case report. J Neurosurg Spine 17:82–85, July 2012). The authors reported a case with acute motor-sensory axonal neuropathy (AMSAN), an axonal variant of Guillain-Barré syndrome (GBS) that occurred immediately after cervical spinal surgery, suggesting an association between AMSAN and acute colitis caused by *Helicobacter pylori*. However, we have some concerns about the diagnosis for this case.

First, the sentence in the first paragraph of the paper “AMSAN has been associated specifically with *Helicobacter pylori* infections” is misleading. The prevalence of *H. pylori* infections in developing countries may reach 70% or more and 40% or less in developed countries.2 However, most people infected with *H. pylori* do not show any clinical sign or symptom and do not develop AMSAN. Moreover, the reference the authors cited5 provided very weak evidence to support their view, because only 2 patients with AMSAN were included in the study. The sample size is too small to draw a reliable conclusion; therefore, large-scale studies are still needed to verify the association between *H. pylori* infections and AMSAN development. Of note is a correlation between *H. pylori* infections and acute inflammatory demyelinating polyradiculoneuropathy (AIDP), the most common subtype of GBS.8 According to the report by Kountouras and colleagues, infection with *H. pylori* has been found in 92% of AIDP patients, which is more frequent than in healthy controls.8 Elevated anti-*H. pylori* immunoglobulin antibodies were associated with the severity of clinical symptoms and involved in the proximal parts of peripheral nerves in AIDP.8 Nevertheless, without further studies, this correlation cannot be directly applied to diagnose AMSAN.

Second, the diagnosis of AMSAN seems inappropriate, since critical illness polyneuropathy (CIP) and critical illness myopathy (CIM), the most common acquired neuromuscular diseases in intensive care units, cannot be ruled out in this case. The risk factors for development of CIP/CIM include sepsis, systemic inflammatory response syndrome, multiple organ dysfunction syndrome, hyperglycemia, hypoalbuminemia, and use of corticosteroids.9 Critical illness polyneuropathy shares some clinical features with AMSAN, both mainly presenting as flaccid weakness (distal more than proximal), attenuated or absent tendon reflexes, and distal sensory loss.9,13 Moreover, patients with CIP may also suffer from ventilatory dysfunction due to phrenic nerve involvement. In this case, a high fever and an elevated sedimentation rate suggest an underlying infection or even sepsis. We thus would like to know of the blood test results that may help to identify infections. In this regard, CIP should be highly suspected, since the incidence of CIP reached 76% in the patients with sepsis.12 Based on electrophysiological tests, it has been recognized that CIM often coexists with CIP.6,10 In the patients with CIM, electromyography may reveal abnormal spontaneous activity, including fibrillation potentials and positive sharp waves.4 Evidence of intense denervation activity alone is not enough to exclude CIM. Rather, direct muscle stimulation is often recommended when it is difficult to distinguish CIM from CIP or their combination by routine electrophysiological tests. Furthermore, to help differentiate among AMSAN, CIP, and CIM, nerve and muscle biopsies should be taken into consideration.1,9 Taken together, an accurate diagnosis of GBS should rely on careful analysis of disease history, clinical manifestations, laboratory testing, electrophysiological investigations, and nerve and muscle biopsies, especially for the patients with sepsis.

Third, nephrotic syndrome seems misdiagnosed. The proteinuria did not reach the diagnosis criterion of nephrotic syndrome,7 which is typically defined as greater than 3–3.5 g protein in a 24-hour urine collection. Renal biopsy should be used to confirm or exclude the diagnosis of nephrotic syndrome, to establish the pathological subtype, to assess disease severity, and to evaluate the prognosis.7 Given the manifestations of high fever, elevated sedimentation rate, peripheral nerve involvement, and renal dysfunction, other disorders, for example, connective tissue diseases, cannot be completely excluded either.

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References
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First, we did not argue that AMSAN is only or mainly associated with *H. pylori* infections; rather, we proposed a possible association between these 2 diseases that has already been reported in the literature. Such an association might be not conclusive, but we aimed to contribute to this clinical discussion in a case report. We agree that *H. pylori* infections are associated more frequently with AIDP than other variants of GBS. Acute motor-sensory axonal neuropathy represents the most common form of GBS, but it is worth noting that in the early phase of GBS the distinction between AIDP and axonal variants may be impossible in some patients. Nevertheless, in our case, electrophysiological evidence pointed to a diagnosis of axonal GBS.

It seems unlikely that the patient’s symptoms could have been related to CIP or CIM because such a diagnosis was not supported by clinical and electromyography data. Before surgical treatment the patient was in good health, and no symptoms related to general diseases were evident. Type 2 diabetes was in the normal range and was being treated with oral metformin. Surgical time was less than 2.5 hours and neurological symptoms occurred 18 hours after surgery. The patient was never admitted to the intensive care unit, and he did not manifest clear signs of sepsis or multiple organ dysfunction syndrome. The patient’s white blood cell count ranged from 7500 to 9500 mm$^3$, his reactive C protein ranged from 2.02 to 2.55, his temperature remained always lower than 37.5°C, and seriated blood cultures were all negative. Furthermore, CSF testing proved positive for protein content and a high anti-GMI antibodies titer.

Serial electrodiagnosis performed after treatment and before transfer to a rehabilitation facility showed progressive improvement of compound muscle action potential amplitudes without development of excessive temporal dispersion.

We did not perform a muscle biopsy because we observed a quick and very good response to immunoglobulins; for the same reason, we decided to perform no other invasive procedure, including kidney biopsy, which would have not changed our therapeutic conduct.

To consider the renal involvement and consequent systemic serosal fluid collections, although a protein loss of 2.8 g/24 hours only approaches the value typically found in nephrotic syndrome, we thought it would be better to treat the dangerous condition before it reached its full-blown phase. On the other hand, the strict adoption of the criterion for nephrotic syndrome leads to further excluding a multiorgan failure needed for suspecting a critical illness.

In conclusion, although in some cases the differential electrodiagnosis of AMSAN and CIP/CIM may be difficult or impossible, a number of clinical clues in our patient pointed toward a diagnosis of axonal GBS. Even in rare conditions (due to genetic susceptibility, different antecedent infections or triggering factors, and electrophysiological criteria used), the axonal variants may represent variable percentages (from 1% to 15%) in different series of patients with acute inflammatory polyneuropathies.

References


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