

Update: Plasmapheresis in Neurologic Disorders

Case Presentation

A 62-year-old, right-hand-dominant male presented to the emergency department with a 3-day history of progressive weakness. Initially he was having difficulty with lifting his toes and was tripping while walking. Subsequently he developed difficulty with climbing stairs. When trying to get out of bed this morning, he fell to the floor, unable to support his weight. He admits to difficulty with a recent gastrointestinal illness that began about a week and a half ago. He also notes some back pain. He denies any prior difficulties with weakness, and he has no history of back pain or recent trauma or medication changes. He has had no recent vaccinations. He denies any changes in sensation. He rates his back pain as a 5/10 and describes it as an aching sensation.

His past medical history is significant for hypertension and hyperlipidemia. He has had no prior surgeries. He has no family history of neurologic disease. He is married with two children who are healthy. He does not smoke or drink. His medications include atenolol 50 mg a day and simvastatin 20 mg at bedtime. He takes an occasional aspirin and multivitamin.

A 10-topic review of systems was conducted. He denies change in vision, swallowing, or hearing. He reports no chest pain or palpitation and no cough or other breathing problems. He denies constipation or urinary difficulties. He has not had any skin change and has no mood or bleeding dysfunction.

On exam his BP is 120/70, RR is 12, temp is 98.7°, and O₂ sat is 100% on RA. He is in no acute distress but is anxious. He has no neck bruits, and his cardiac examination is normal. Mental status examination reveals memory of three objects after 5 minutes. He is able to read, write, and repeat; is oriented to situation, place, date, and city; and is able to follow complex commands. Calculations are done well. His cranial nerve examination reveals sharp optic discs bilaterally, pupils equally round and reactive to light and accommodation, and intact extraocular muscles. Facial sensation and motor strength are symmetric bilaterally. Hearing is intact to finger rub and palate; tongue and uvula are midline. Sternocleidomastoid is 5/5.

Motor examination is 5/5 in the upper extremities proximally and distally except 4/5 in the interosseous bilaterally. In the legs hip flexors are 3/5, knee flexors and extensors are 2/5, and dorsiflexion and plantar flexion are 1/5. Sensory exam is intact bilaterally to light touch and pin prick. There is a mild decrease to vibration distally at the great toes. Reflexes are 2/4 in the arms and 0/4 in the legs; toes are mute. Coordination is intact to finger to finger but difficult to perform HTS secondary to weakness. He is not able to stand without a two-person maximal assist secondary to leg weakness.

You explain to the patient that this appears to be an acute inflammatory demyelinating polyneuropathy (AIDP), and you review in detail the diagnosis, potential treatments, prognosis, and potential complications of the disease. The patient will be admitted to the neurology service for further evaluation and treatment. Imaging studies, lab testing, EMG/nerve conduction velocity (NCV) testing, and pulmonary function testing are ordered. The total time spent in this evaluation is 1.5 hours, more than 45 minutes of which was expended in counseling and coordination of care.

His admission workup confirms an AIDP on the basis of the EMG/NCV. A lumbar tap reveals albuminocytologic dissociation. Stool samples reveal *C. jejuni*. The infection is treated, and consideration is made for treatment of the AIDP with plasmapheresis versus intravenous immunoglobulin. The risks and benefits of each treatment option are discussed as well as the recent AAN guideline¹ results.

Questions

1. In the treatment of AIDP, plasmapheresis is established as effective.
A. True
B. False

The correct answer is A. Plasmapheresis is established as effective and should be offered in severe AIDP/Guillain-Barré Syndrome (GBS) and in the short-term management of chronic inflammatory demyelinating polyneuropathy (CIDP) (Class I studies, Level A).

2. Severe AIDP is defined as:
A. Slight difficulties with ambulation or bowel changes
B. Inability to walk independently or severe enough to require mechanical ventilation
C. Eye movement abnormalities or facial palsy
D. Difficulties with using the dominant hand
E. Difficulties with performing activities of daily living such as showering or dressing

The correct answer is B. On the basis of consistent findings from Class I studies, plasmapheresis is established as effective for the treatment of AIDP/GBS severe enough to impair the ability to walk independently or severe enough to require mechanical ventilation (Level A). For milder AIDP/GBS, in which ambulation is preserved, plasmapheresis is probably effective and should be considered, based on a single Class I study (Level B).

Diagnosis Coding

The ICD-9-CM² code for AIDP/GBS is:

- 357.0 Acute infective polyneuritis
 - Guillain-Barré syndrome
 - Post-infectious polyneuritis

Had this been CIDP, the code would be:

357.81 Chronic inflammatory demyelinating polyneuritis

Evaluation and Management Coding

Selection of the evaluation and management (E&M) coding will depend on whether the patient has Medicare or private insurance and whether one uses bullets or time for billing. If the patient has Medicare and you use the bullet billing method, one would use the code 99223 for either an initial neurologic consultation or initial admission. Medicare does not pay for consultations as of January 1, 2010. If the patient has private insurance, one would choose the code 99255 for an initial inpatient consultation or 99223 for an initial hospital day admission. The choice is based on a patient who required a comprehensive history and physical examination and high complexity medical decision making for care. If one tries to use the counseling and coordination of care method of billing, one would use the level 4 initial inpatient consultation (99254) for a private patient as the neurologist must be present with the patient or on the unit floor for 110 minutes to use the level 5 code (99255) and more than 50% of the time would need to be spent counseling and coordinating care. For the code 99254, the time basis is 80 minutes. If the patient is admitted to the neurologist's ward service, code 99223 has a time basis of 70 minutes, so only 35 minutes or more would be needed in counseling and coordination of care to use this method to bill.

Nerve Conduction Studies, Reflex and Late Response Testing

The following applies to nerve conduction tests (95900-95904): Codes 95900-95904 describe nerve conduction tests when performed with individually placed stimulating, recording, and ground electrodes. The stimulating, recording, and ground electrode placement and the test design must be individualized to the patient's unique anatomy. Nerves tested must be limited to the specific nerves and conduction studies needed for the particular clinical question being investigated. The stimulating electrode must be placed directly over the nerve to be tested, and stimulation parameters properly adjusted to avoid stimulating other nerves or nerve branches. In most motor nerve conduction studies, and in some sensory nerve conduction studies, both proximal and distal stimulation will be used. Motor nerve conduction study recordings must be made from electrodes placed directly over the motor point of the specific muscle to be tested. Sensory nerve conduction study recordings must be made from electrodes placed directly over the specific nerve to be tested. Waveforms must be reviewed on site in real time, and the technique (stimulus site, recording site, ground site, filter settings) must be adjusted, as appropriate, as the test proceeds in order to minimize artifact, and to minimize the chances of unintended stimulation of adjacent nerves and the unintended recording from adjacent muscles or nerves. Reports must be prepared on site by the examiner, and consist of the work product of the interpretation of numerous test results, using well-established techniques to assess the amplitude, latency, and configuration of waveforms elicited by stimulation at each site of each nerve tested. This includes the calculation of nerve conduction velocities, sometimes including specialized F-wave indices, along with comparison to normal values, summarization of clinical and electrodiagnostic data, and physician or other qualified health care professional interpretation.

95900 Nerve conduction, amplitude and latency/velocity study, each nerve; motor, without F-wave study

95903 motor, with F-wave study

95904 sensory

(Report 95900, 95903, and/or 95904 only once when multiple sites on the same nerve are stimulated or recorded)

95933 Orbicularis oculi (blink) reflex, by electrodiagnostic testing

95934 H-reflex, amplitude and latency study; record gastrocnemius/soleus muscle

95936 record muscle other than gastrocnemius/soleus muscle

(To report a bilateral study, use modifier 50)

For listing of nerves considered for separate study, see Appendix J in CPT® 2011. If a procedure is on this list, it could be coded as a separate unit of 95900, 95903 or 95904.

The statement “(Report 95900, 95903, and/or 95904 only once when multiple sites on the same nerve are stimulated or recorded)” serves solely as a reminder that a nerve conduction study assessing different segments of a single nerve cannot be coded as separate units. For example, study of four segments of the right ulnar motor nerve (without F-waves) – (1) axilla-above elbow, (2) above-below elbow, (3) below elbow-wrist, and (4) wrist-abductor digiti minimi muscle – can only be coded as one unit of 95900.

Appendix J of CPT® 2011 includes a table outlining the recommended numbers of motor and sensory nerve conduction studies that can be used to diagnose 90% of patients with certain common conditions and symptoms.

CPT® Changes 2006: An Insider's View explained the rationale behind this table:

“The maximum number of studies table summarizes the recommended maximum number of studies per diagnostic category necessary for a physician to arrive at a diagnosis in 90% of patients with that final diagnosis, when performing needle electromyography (EMG) tests (95860-95864 and 95867-95870); nerve conduction studies (95900, 95903, and 95904); and other EMG studies (95934, 95936, and 95937). The numbers in the table are to be used as a tool to detect outliers to assist in appropriate reporting. Each number in the table represents one study or unit. The maximum numbers are designed to apply to a diverse range of practice styles as well as practice types, including those at referral centers where more complex testing is frequently necessary. In simple, straightforward cases, fewer tests will be necessary. This is particularly true when results of the most

critical tests are normal. In complex tests, the maximum numbers in the table will be insufficient for the physician to arrive at a complete diagnosis. In cases where there are borderline findings, additional tests may be required to determine if the findings are significant.

“The appropriate number of studies to be performed should be left to the judgment of the physician performing the electrodiagnostic (EDX) evaluation; however, in the small number of cases that require testing in excess of the numbers listed in the table, the physician should be able to provide supplementary documentation to justify the additional testing. Such documentation should explain what other differential diagnostic problems needed to be ruled out in that particular situation. In some patients, multiple diagnoses will be established by EDX testing, and the recommendations listed in the table for a single diagnostic category will not apply. It should be noted that in some situations it is necessary to test an asymptomatic contralateral limb to establish normative values for an individual patient. Normal values based on the general population alone are less sensitive than this approach; therefore, restrictions on contralateral asymptomatic limb testing will reduce the sensitivity of electrodiagnostic tests.”

Electromyography

Needle electromyography procedures include the interpretation of electrical waveforms measured by equipment that produces both visible and audible components of electrical signals recorded from the muscle(s) studied by the needle electrode.

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| 95860 | Needle electromyography; one extremity with or without related paraspinal areas |
| 95861 | two extremities with or without related paraspinal areas |
| 95863 | three extremities with or without related paraspinal areas |
| 95864 | four extremities with or without related paraspinal areas |
| 95867 | cranial nerve supplied muscles, unilateral |
| 95868 | cranial nerve supplied muscles, bilateral |
| 95869 | thoracic paraspinal muscles (excluding T1 or T12) |
| 95870 | limited study of muscles in one extremity or non-limb (axial) muscles (unilateral or bilateral), other than thoracic paraspinal, cranial nerve supplied muscles, or sphincters |

A common question concerns how many muscles should/need to be studied per limb in order to use the limb EMG codes. The proper procedure for Medicare patients has been outlined in the Federal Register (issue of October 31, 1997, Vol. 62, No. 211, page 59090, see below).

Another frequent question is whether one can bill codes for limited study of specific muscles (CPT® codes 95869 and 95870) multiple times for each muscle, etc. The Centers for Medicare & Medicaid Services (CMS) clearly sets forth the procedures to be followed (see below).

In order to clarify the proper use of these codes, CMS has formulated the following policies:

CPT® codes 95860, 95861, 95863, and 95864 (Needle electromyography of 1, 2, 3, or 4 limbs with or without related paraspinal areas).

To bill these codes, extremity muscles innervated by three nerves (for example, radial, ulnar, median, tibial, peroneal, femoral, not sub-branches) or four spinal levels must be evaluated, with a minimum of five muscles studied per limb.

One cannot bill paraspinals separately with these codes - unless studying paraspinals between T3-T11, in which case code 95869 is to be used.

CPT® code 95869 (Needle electromyography, thoracic paraspinal muscles).

This CPT® code should be used when exclusively studying thoracic paraspinal muscles, excluding T1 or T12. One unit can be billed, despite the number of levels studied or whether unilateral or bilateral. This code cannot be billed with CPT® codes 95860, 95861, 95863, or 95864 if only T1 and/or T2 are studied when an upper extremity was also studied.

CPT® code 95870 (Needle electromyography; other than paraspinal (eg, abdomen, thorax)).

This CPT® code can be billed at one unit per extremity. The code can also be used for muscles on the thorax or abdomen (unilateral or bilateral). One unit may be billed for studying cervical or lumbar paraspinal muscles (unilateral or bilateral), regardless of the number of levels tested. This code should not be billed when the paraspinal muscles corresponding to an extremity are tested and when the extremity codes 95860, 95861, 95863, or 95864 are also billed.

Principles of CPT® Coding, Sixth Edition states: “That code may be used more than once. For example, if three muscles are tested in each upper extremity, use code 95870 with two units of service, rather than code 95861.” (page 453)

Lumbar Puncture (Diagnostic)

62270 Spinal puncture, lumbar, diagnostic

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1. Cortese I, Chaudhry V, So YT, et al. Evidence-based guideline update: Plasmapheresis in neurologic disorders: Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology*® 2011;76;294–300.
2. Centers for Disease Control and Prevention. International classification of diseases, ninth revision, clinical modification (ICD-9-CM). www.cdc.gov/nchs/icd/icd9cm.htm.

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