

REFERRAL GUIDELINES FOR ELECTRODIAGNOSTIC MEDICINE CONSULTATIONS

INTRODUCTION

These guidelines are designed to help physicians determine if referral for an electrodiagnostic medicine (EDX) consultation could be useful for a patient. The EDX consultation evaluates nerve and muscle function and is a direct extension of the clinical neuromuscular examination. The EDX consultation provides helpful information in the evaluation of motor and sensory neurons, nerve roots, brachial and lumbar plexi, peripheral nerves, neuromuscular junction, and muscles. Etiologies of clinical problems of weakness, atrophy, fatigability, pain, numbness, and paresthesias can be investigated by these methods. The most commonly utilized EDX studies include, but are not limited to, nerve conduction studies (NCSs) and needle electromyography (EMG), in which narrow-gauge sterile needle electrodes are used to investigate nerve and muscle pathology.

Symptoms are listed in Table 1 with associated possible diagnoses. EDX studies can help establish these conditions, as well as indicate other relevant problems, define the severity and chronicity of the disorder, and/or provide information useful for treatment. This list is not exhaustive, but serves as a reference for common problems which might be encountered. Conditions are also mentioned for which EDX studies are not indicated.

It is hoped that these guidelines will be helpful for making clinical decisions. If there are questions, discussion with the physician performing the EDX examination is recommended. With specialized expertise, EDX studies can be helpful for the evaluation of: 1) paresis of ocular muscles, 2) speech difficulties due to paresis of laryngeal muscles, and 3) disorders of movement and tone due to disorders of the central nervous system.

Needle EMG examination may be helpful for guiding botulinum toxin therapy, as well as for following the effect of this treatment.

LIMITATIONS

EDX studies are a supplement to, not a replacement for, a careful history and physical examination. EDX studies will not be helpful where pain results from joint disease. EDX studies are also generally not helpful when weakness or sensory loss is due to central nervous system disease. Clinically this would be manifest by such symptoms as hemiparesis, hemisensory loss, or upper motor neuron manifestations such as hyperreflexia and a Babinski sign. However, electrodiagnostic studies can help distinguish central from peripheral symptomatology, and can provide evidence for relevant nerve injury where pain clinically seems musculoskeletal in origin. EDX studies should not be obtained if the information will not potentially enhance the patient's care.

Table 1: Common Symptoms and Diagnosis

Symptoms	Diagnoses
Generalized weakness	Neuropathies Myopathies (including endocrine) Motor system disease (e.g., amyotrophic lateral sclerosis) Neuromuscular junction disorder (e.g., myasthenia gravis)
Facial weakness (including ptosis)	Facial (seventh cranial) nerve lesions Myopathy Neuromuscular junction disorder (e.g., myasthenia gravis)
Facial pain and/or numbness	Injury of the trigeminal (fifth cranial) nerve
Involuntary facial movement	Myokymia Hemifacial spasm

Key Words: neuropathies • radiculopathies • plexopathy • myopathy

Table 1: Common Symptoms and Diagnosis

Symptoms	Diagnoses
Dysphagia	Myopathy Neuromuscular junction disorder (e.g., myasthenia gravis) Motor system disease (e.g., amyotrophic lateral sclerosis)
Dysarthria	Injury of the hypoglossal (twelfth cranial) nerve Neuromuscular junction disorder (e.g., myasthenia gravis) Motor system disease (e.g., amyotrophic lateral sclerosis)
Respiratory insufficiency	Phrenic nerve lesions Myopathy (e.g., acid maltase deficiency) Myasthenia gravis Motor system disease (e.g., amyotrophic lateral sclerosis)
Neck pain	Cervical radiculopathy Brachial plexopathy Focal neuropathy (e.g., spinal accessory nerve)
Thoracic pain	Thoracic radiculopathy
Back pain	Lumbosacral radiculopathy Lumbosacral plexopathy
Shoulder and arm pain, numbness, altered sensation (e.g., pins and needles), weakness, cramps, fasciculations, muscle atrophy or hypertrophy (focal or diffuse)	Cervical radiculopathy Brachial plexopathy Polyneuropathy Focal neuropathy (e.g., carpal tunnel syndrome, ulnar nerve injury at the elbow, suprascapular nerve injury at the shoulder) Myopathy Motor system disease (e.g., amyotrophic lateral sclerosis)
Hip and leg pain, numbness, altered sensation (i.e., pins and needles), weakness, cramps, fasciculations, muscle atrophy or hypertrophy	Syrinx Lumbosacral radiculopathy Lumbosacral plexopathy Polyneuropathy Focal neuropathy (e.g., tarsal tunnel syndrome, femoral [focal or diffuse] mononeuropathy) Myopathy Motor system disease (e.g., amyotrophic lateral sclerosis)
Urinary and anal sphincter dysfunction	Lumbosacral radiculopathy Cauda equina syndrome Perineal neuropathy Lumbar stenosis Polyradiculopathy Pudendal nerve injury Diffuse lumbosacral root injury
Distal weakness	Polyneuropathy Focal mononeuropathy (e.g., carpal tunnel syndrome, ulnar neuropathy)
Proximal weakness	Myopathy (e.g., inclusion body myositis, distal myopathy) Myopathy Plexopathy

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