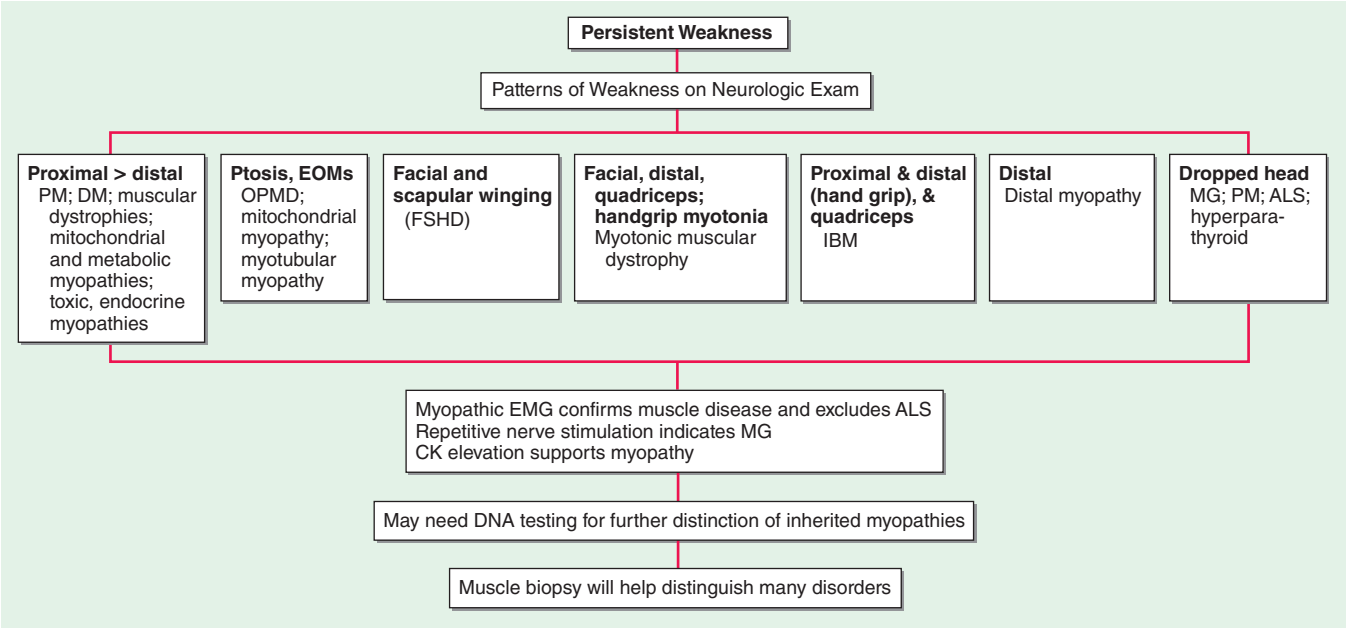

FIGURE 462e-2 Diagnostic evaluation of persistent weakness. Examination reveals one of seven patterns of weakness. The pattern of weakness in combination with the laboratory evaluation leads to a diagnosis. ALS, amyotrophic lateral sclerosis; CK, creatine kinase; DM, dermatomyositis; EMG, electromyography; EOMs, extraocular muscles; FSHD, facioscapulohumeral dystrophy; IBM, inclusion body myositis; MG, myasthenia gravis; OPMD, oculopharyngeal muscular dystrophy; PM, polymyositis.

muscle. Pathologic fatigability is accompanied by abnormal clinical or laboratory findings. Fatigue without those supportive features almost never indicates a primary muscle disease.

Muscle Pain (Myalgias), Cramps, and Stiffness Muscle pain can be associated with cramps, spasms, contractures, and stiff or rigid muscles. In distinction, true myalgia (muscle aching), which can be localized or generalized, may be accompanied by weakness, tenderness to palpation, or swelling. Certain drugs cause true myalgia (Table 462e-3).

There are two painful muscle conditions of particular importance, neither of which is associated with muscle weakness. *Fibromyalgia* is a common, yet poorly understood, type of myofascial pain syndrome. Patients complain of severe muscle pain and tenderness and have specific painful trigger points, sleep disturbances, and easy fatigability. Serum creatine kinase (CK), erythrocyte sedimentation rate (ESR), electromyography (EMG), and muscle biopsy are normal (Chap. 396). *Polymyalgia rheumatica* occurs mainly in patients >50 years and is characterized by stiffness and pain in the shoulders, lower back, hips, and thighs (Chap. 385). The ESR is elevated, while serum CK, EMG, and muscle biopsy are normal. Temporal arteritis, an inflammatory disorder of medium- and large-sized arteries, usually involving one or more branches of the carotid artery, may accompany polymyalgia rheumatica. Vision is threatened by ischemic optic neuritis. Glucocorticoids can relieve the myalgias and protect against visual loss.

TABLE 462e-1 NEUROMUSCULAR CAUSES OF PTOSIS OR OPHTHALMOPLEGIA

Peripheral Neuropathy
Guillain-Barré syndrome
Miller Fisher syndrome
Neuromuscular Junction
Botulism
Lambert-Eaton syndrome
Myasthenia gravis
Congenital myasthenia
Myopathy
Mitochondrial myopathies
Kearns-Sayre syndrome
Progressive external ophthalmoplegia
Oculopharyngeal and oculopharyngodistal muscular dystrophy
Myotonic dystrophy (ptosis only)
Congenital myopathy
Myotubular
Nemaline (ptosis only)
Hyperthyroidism/Graves' disease (ophthalmoplegia without ptosis)
Hereditary inclusion body myopathy type 3

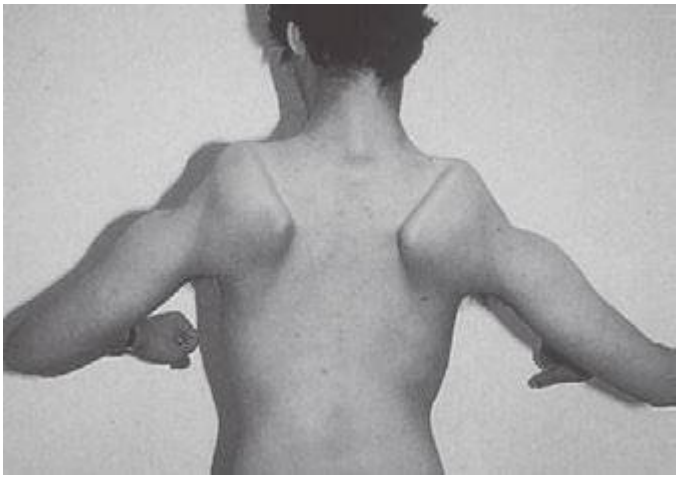

FIGURE 462e-3 Facioscapulohumeral dystrophy with prominent scapular winging.

Localized muscle pain is most often traumatic. A common cause of sudden abrupt-onset pain is a ruptured tendon, which leaves the muscle belly appearing rounded and shorter in appearance compared to the normal side. The biceps brachii and Achilles tendons are particularly vulnerable to rupture. Infection or neoplastic infiltration of the muscle is a rare cause of localized muscle pain.

A *muscle cramp* or *spasm* is a painful, involuntary, localized, muscle contraction with a visible or palpable hardening of the muscle. Cramps are abrupt in onset, short in duration, and may cause abnormal posturing of the joint. The EMG shows firing of motor units, reflecting an origin from spontaneous neural discharge. Muscle cramps often occur