Neurogenic muscle hypertrophy

Figure Left calf findings

Coronal T2-weighted (A) and axial T2-weighted fat-saturated (B) MRI show diffuse swelling of gastrocnemius and soleus muscles. Gastrocnemius medialis biopsy: hematoxylin & eosin ($\times 10$) (C) and nicotinamide adenine dinucleotide tetrazolium reductase ($\times 20$) (D) stains. Note variability in fiber diameters with predominance of hypertrophic fibers, internal nucleation, fiber splitting, disruption of intermyofibrillar architecture, and target fibers corresponding to denervation.

A 42-year-old man had a 2-year history of progressive asymptomatic left calf enlargement. MRI showed diffuse swelling of left calf muscles (figure, A and B); biopsy displayed neurogenic changes (figure, C and D). Electrodiagnostic examination results were compatible with left chronic S1 radiculopathy and lumbosacral MRI revealed an ipsilateral L5-S1 disc protrusion encroaching on the foraminal space.

Unilateral calf swelling may be associated with deep vein thrombosis, ruptured popliteal cyst, tumors, trauma, autoimmune disorders, vascular anomalies, focal myositis, and radiculopathy. Neurogenic disorders usually cause muscle atrophy; hypertrophic changes may result from compensatory work of nondenervated muscle fibers and spontaneous electrical activity of denervated muscle fibers.¹

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