FULL-LENGTH ARTICLE NPub.org/2po95i

Immune myopathy with large histiocyte-related myofiber necrosis

Alan Pestronk, MD, Namita Sinha, MD, Ziad Alhumayyd, MD, et al.

Cite as: *Neurology*® 2019;92:e1763-e1772. doi:10.1212/WNL.0000000000007260

Correspondence
Dr. Pestronk
pestronka@neuro.wustl.edu

Study objective and summary result

This study describes the clinical and laboratory features observed in 4 patients who had a distinctive pattern of muscle pathology with large, often multinucleated, histiocytes that neighbored necrotic muscle fibers. It reports that these patients had sub-acutely evolving, proximal predominant weakness, associated systemic disorders, most commonly anemia, and very high serum creatine kinase (CK) levels.

What is known and what this paper adds

Acquired immune and inflammatory myopathies with prominent muscle fiber necrosis constitute a heterogeneous group of disorders. This study characterizes a previously unreported myopathologic disorder.

Participants and setting

This study reviewed available records of patients whose muscle biopsy samples were included in a neuromuscular pathology collection at the Washington University School of Medicine in St. Louis. These patients were selected because their muscle biopsies showed unusual large cells that had large nuclei and abundant cytoplasm, and neighbored scattered necrotic muscle fibers. The muscle biopsies had been taken from 18-, 21-, and 37-year old women, and a 52-year-old man. Patients were initially evaluated between 1996 and 2016.

Design, size, and duration

This study reviewed the patients' clinical records and biopsy reports. The biopsy samples were reexamined with histochemistry, immunohistochemistry, and, in 3 patients' cases, electron microscopy.

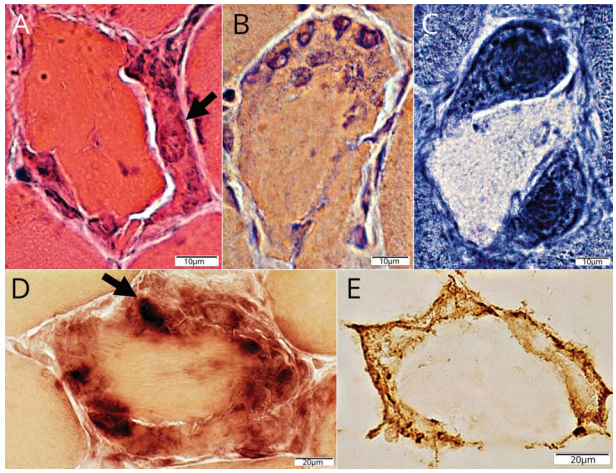
Primary outcome measures

The primary outcomes were the patients' clinical and laboratory features, and muscle biopsy pathology.

Main results and the role of chance

The 4 patients had muscle pain, proximal, symmetric, moderate-to-severe limb weakness that progressed over 1–4 weeks, and anemia. Other accompanying disorders included hemophagocytic lymphohistiocytosis, hepatic disease, Raynaud phenomenon, metastatic squamous cell cancer, or cardiomyopathy. Serum CK levels were initially very high (10,000–102,000 U/L). The biopsies contained many scattered necrotic muscle fibers. Large, often multinucleated, histiocytic cells were observed, outside, or penetrating through, the basal lamina, and within regions of, or replacing, necrotic myofibers. Three patients improved within 3 months after treatment. The myopathy may be due to an autoimmune, histiocyte-mediated attack directed against muscle fibers.

Figure Large histiocyte–related myofiber necrosis



(A) H&E, (B) Congo red, (C) NADH, (D) Acid phosphatase, (E) HAM56 stains show large, multinucleated, histiocytic cells (Arrow) neighboring necrotic muscle fibers. Bars = 10 μM.

Bias, confounding, and other reasons for caution

This study included only 4 patients.

Generalizability to other populations

Large histiocyte immune myopathy is rare. The generalizability of this study's results will depend on identification of additional, similar patients, and more understanding of antigenic targets and pathogenic mechanisms.

Study funding/potential competing interests

This study was funded by the Washington University Neuromuscular Research Fund. The authors report no competing interests. Go to Neurology.org/N for full disclosures.

A draft of the short-form article was written by M. Dalefield, a writer with Editage, a division of Cactus Communications. The authors of the full-length article and the journal editors edited and approved the final version.

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Neurology 2019;92;e1763-e1772 Published Online before print March 20, 2019
DOI 10.1212/WNL.0000000000007260