SHORT REPORT

McArdle’s disease with late-onset symptoms: case report and review of the literature

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Abstract

McArdle’s disease with late-onset symptoms is an unusual cause for muscle disease in older patients. The case of a patient with McArdle’s disease whose symptoms began at 60 years of age is presented, and seven previous cases of late-onset McArdle’s disease reported since 1963 are discussed. In five of the eight patients, the clinical presentation was similar to the early onset disorder with exercise intolerance, cramps, and myoglobinuria. In contrast, the remaining three patients presented with fixed proximal limb and bulbar weakness. Electromyography confirmed a myopathic process in four of four patients. Results of the forearm ischaemic exercise test were positive in seven of seven patients with complete myophosphorylase deficiency; results of muscle biopsies were diagnostic in all patients. McArdle’s disease with late-onset symptoms is rare and clinically more variable than the early onset disorder.

McArdle’s disease is an energy-dependent disorder of skeletal muscle caused by a deficiency of myophosphorylase, an important enzyme of carbohydrate metabolism that converts glycogen to glucose-1-phosphate. Because the energy produced by glycolysis is reduced in patients with a deficiency of myophosphorylase, symptoms of exercise intolerance, muscle cramps, and weakness usually predominate during short bursts of high-intensity exercise. Many patients experience a second wind, that is, when they rest briefly after cramps first appear, they can resume exercise without further symptoms. McArdle first described the disorder in 1951 in a 30 year old man with lifelong intolerance to exercise.

Typically, patients note exercise intolerance with muscle cramps during teenage years; rarely do symptoms begin after the age of 30 years. In 1963, Engel et al reported the first two cases of late-onset deficiency of myophosphorylase. We describe an additional case and review the clinical, laboratory, and pathological data on previously reported cases.

Discussion

This patient’s symptoms of McArdle’s disease began in the seventh decade. An inflammatory myopathy was originally suspected because of elevated serum levels of CK, the results of electromyography, the positive ANA staining, and the suggested alleviation of symptoms with oral prednisone therapy. However, the history of repeated bouts of exercise-induced cramps suggested a metabolic myopathy. Positive results on forearm ischaemic exercise test and muscle biopsy confirmed the diagnosis of McArdle’s disease.

Seven other cases of McArdle’s disease with late-onset symptoms (that is, at the age of 45...
### Table Late-onset myophosphorylase deficiency: clinical and laboratory features

<table>
<thead>
<tr>
<th>Author et al</th>
<th>Case</th>
<th>Sex</th>
<th>Age (Year)</th>
<th>Onset</th>
<th>Present</th>
<th>Family History</th>
<th>Clinical Symptoms</th>
<th>Serum Creatine</th>
<th>Forearm Ischaemic Exercise Test</th>
<th>Electromyography</th>
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<tbody>
<tr>
<td>Engel et al</td>
<td>1</td>
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<td>49</td>
<td>52</td>
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<td>PW, EI</td>
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<td>Positive</td>
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<tr>
<td></td>
<td>2</td>
<td>M</td>
<td>49</td>
<td>60</td>
<td>Yes</td>
<td>C, EI</td>
<td>Normal</td>
<td>Normal</td>
<td>Not available</td>
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<tr>
<td>Hewlett et al</td>
<td>3</td>
<td>M</td>
<td>74</td>
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<td>PW, FW, P</td>
<td>Elevated 13 ×</td>
<td>Positive</td>
<td>MU</td>
<td></td>
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<tr>
<td>Kost et al</td>
<td>4</td>
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<td>C, EI, M</td>
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<td>Rumpf et al</td>
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<td>M</td>
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<tr>
<td>Meinck et al</td>
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<td>Pournand et al</td>
<td>7</td>
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<tr>
<td>Present case</td>
<td>8</td>
<td>M</td>
<td>60</td>
<td>70</td>
<td>No</td>
<td>EL, C</td>
<td>Elevated 2-40 ×</td>
<td>Positive</td>
<td>MU, AS</td>
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</tr>
</tbody>
</table>

PW = progressive weakness, EI = exercise intolerance, C = cramps, FW = facial weakness, P = ptosis, M = myoglobinuria, SW = second wind, D = dysphagia, MU = myopathic units, AS = abnormal spontaneous activity.

Exercise tests demonstrated a normal rise in serum lactate level after exercise.

McArdle’s disease with late-onset symptoms is a rare disorder with more variable clinical presentation than the early onset disorder. Myophosphorylase deficiency should be considered in older patients with unexplained generalised or focal myopathies with or without muscle cramps and including patients with bulbar features. A positive result on forearm ischaemic exercise testing is a sensitive initial study which, when results are positive, should lead to histochemical evaluation on muscle biopsy.

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