Study could herald new treatment for muscular dystrophy

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Credit: University of Rochester Medical Center

New research has shown that the corticosteroid deflazacort is a safe and effective treatment for Duchenne muscular dystrophy. The findings, which appear this month in the journal *Neurology*, could pave the way for first U.S.-approved treatment for the disease.

"Duchenne muscular dystrophy patients have limited treatment options and a desperate need for effective therapies," said University of Rochester Medical Center (URMC) neurologist Robert Griggs, M.D., lead author of the study. "This study shows that deflazacort may provide an important treatment for delaying the progression of the disease."

Duchenne muscular dystrophy (DMD) is a condition found almost exclusively in boys. The disease is characterized by muscle weakness which begins to appear at a young age and progresses rapidly leading to significant disability. Boys with the disease often end up in a wheelchair by age 9 or 10 because of weakness in their legs. The symptoms eventually spread to other parts of the body, including the heart and muscles responsible for breathing, and the disease is often fatal by the time the individual reaches his late teens. An estimated 28,000 people in the U.S. suffer from the disease.

While there is currently no approved treatment for DMD, the corticosteroid prednisone is often used "off label" to treat the condition. Several studies, beginning with research conducted by Griggs and his colleagues more than 20 years ago, have shown that daily use of corticosteroids can increase muscle mass and slow muscle degeneration in DMD patients, prolonging their ability to walk and preserving respiratory function. However, many DMD patients in the U.S. are not prescribed corticosteroids, primarily due to concern over the side effects of prolonged drug use in children.

While deflazacort is approved for use in Europe and elsewhere to treat DMD, the drug has never gone through the approval process with the U.S. Food and Drug Administration (FDA). Studies of the drug abroad have shown that it is effective and has fewer side effects compared to other corticosteroids, namely less associated weight gain .

Deflazacort was involved in a Phase 3 clinical trial in the U.S. in the mid-1990s. However, soon after the trial was completed, the company sponsoring the research lost interest in the drug, the study results were never published, and efforts to obtain FDA approval were abandoned.

At the urging of patients and their families, Griggs and others spent decades attempting to get access to the original study data. In the intervening years, another company – Marathon Pharmaceuticals – acquired the rights to the deflazacort and began a new push to gain FDA approval for the drug. The researchers were never able to obtain the data from the original clinical trial sponsor and in the end had to painstakingly reconstruct the study results from the information collected at each individual study site. This data forms the basis for the new

Neurology study.

The study, which involved 196 DMD patients, showed that deflazacort was safe, effectively preserved muscle strength, and was associated with less weight gain than prednisone.

The data from the study is the foundation for two New Drug Applications currently pending before the FDA for use of the drug to treat DMD. If approved, deflazacort with be the first drug sanctioned in the U.S. to treat the disease.

Griggs is also heading up another international study that seeks addresses the variation in care that DMD patients currently receive by establishing a universal and effective standard of care. The new study, called FOR-DMD (Finding the Optimum Regimen of Corticosteroids for Duchenne Muscular Dystrophy), will determine whether daily steroid treatment or an alternative regime is more effective in slowing the disease progression and managing side effects. The clinical trial, which will evaluate both prednisone and deflazacort, will follow 200 patients for 3-5 years.

Provided by University of Rochester Medical Center