New Potential Treatment for Muscular Dystrophy Appears to Be Safe

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Myostatin, a protein that blocks muscle growth, has shown promising results as a potential therapeutic target for treating muscular dystrophy in animal studies, where its inhibition led to increased muscle mass and strength. A new study, the first to evaluate a myostatin inhibitor in patients, assessed its safety in adults with muscular dystrophy and found that it was well-tolerated. The study was published today in *Annals of Neurology*, the official journal of the American Neurological Association.

Muscular dystrophy is an inherited disorder involving progressive muscle weakness and wasting. Although there has been progress in understanding the pathology of this disease, no drug treatments that increase muscle strength have been found. In addition, very few trials have been conducted for muscular dystrophy that begins in adulthood, and none of these involved novel drugs.

A double-blind, randomized study of 116 patients with muscular dystrophy was conducted by researchers from 10 centers in the United States and United Kingdom. Patients with multiple different types of muscular dystrophy were divided into four groups given sequentially higher doses of a myostatin inhibitor called MYO-029 produced by Wyeth Pharmaceuticals. Each group was randomized to receive the test drug or a placebo in a 3:1 ratio. The drug or placebo was administered intravenously every two weeks for six months, after which the patients were followed for three months. Although the purpose of the study was to test for safety, muscle strength and mass were also assessed.

The results showed that safety assessments, including vital signs, laboratory tests and physical examination showed no significant differences between treatment and placebo groups. There were no side effects to skeletal, smooth or cardiac muscle, and the most significant side effects related to the treatment were hypersensitivity skin reactions (such as hives).

No increase in muscle strength or improvement in function was seen during the nine months of the study, although muscle mass did increase in some of the patients. Because the sample sizes in the different dosage groups were small, differences between the groups did not reach statistical significance. “However, the consistency of the response to treatment in the various measures of effects on muscle tissue suggests that MYO-029 reached its intended target, producing a modest degree of muscle fiber hypertrophy and increased muscle mass in some treated subjects,” noted Kathryn R. Wagner of The Johns Hopkins University School of Medicine and her coauthors. They add that larger studies over longer periods of time would be necessary to properly evaluate the efficacy of this new treatment.

“This trial supports the hypothesis that systemic administration of myostatin inhibitors provides an adequate safety margin for clinical studies, and these inhibitors should be evaluated for stimulating muscle growth in muscular dystrophy,” the authors conclude. They note that additional muscle inhibitors are in development and clinical trials for other muscle-wasting conditions, and further evaluation of more powerful myostatin inhibitors for muscle disorders should be considered.

Article: “A Phase I/II Trial of MYO-029 in Adult Subjects with Muscular Dystrophy,” Kathryn R. Wagner, James L. Fleckenstein, Anthony A. Amato, Richard J. Barohn, Katharine Bushby, Diana M. Escolar, Kevin M. Flanigan, Alan Pestronk, Rabi Tawil, Gil I. Wolfe, Michelle Eagle, Julaine M. Florence, Wendy M. King, Shree Pandya,

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