Study identifies factors linked with better medication response for treatment of juvenile arthritis

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Among patients with juvenile idiopathic arthritis (JIA) who initiated treatment with the drug etanercept, one-third achieved an excellent response, and this response was associated with low measures of disability at study entry, younger age at the onset of JIA, and fewer disease-modifying antirheumatic drugs used before initiating etanercept, according to a study appearing in *JAMA*. The study is being released early online to coincide with its presentation at the American College of Rheumatology/Association of Rheumatology Health Professionals Annual Scientific Meeting.

Etanercept was approved a decade ago by the U.S. Food and Drug Administration and the European Medicines Agency for the treatment of JIA. "Since the development of biological agents, the pharmacological treatment approach of JIA is changing rapidly, and synthetic disease-modifying antirheumatic agents (DMARDs) are used earlier in the disease course, which seem to provide better long-term outcomes. As a result of these treatment successes, a treatment goal of reaching inactive disease now seems realistic. However, inactive disease is still not achieved in a substantial proportion of cases, and current approaches need to be optimized even more," according to background information in the article. "The ability to identify patients who are more likely to respond to etanercept treatment would be an important step toward tailored patient-specific treatment and subsequently could improve current treatment approaches."

Marieke H. Otten, M.D., M.Sc., of the Erasmus MC Sophia Children's Hospital, Rotterdam, The Netherlands, and colleagues conducted a study to evaluate JIA disease activity after beginning treatment with etanercept and to identify characteristics associated with treatment response. The researchers used data from the Arthritis and Bioiogicals in Children Register, an ongoing prospective observational study since 1999, which includes all Dutch JIA patients who received biologic agents. All biologically naive (had not previously received a biological agent) patients who started etanercept before October 2009 were included, with follow-up data to January 2011. Among the 262 patients, 185 (71 percent) were female, 46 (18 percent) had systemic-onset and the median (midpoint) age at initiation of etanercept treatment was 12.4 years.

For this study, response to treatment was evaluated 15 months after initiation of etanercept. Excellent response was defined as inactive disease or discontinuation earlier due to disease remission; intermediate response: more than 50 percent improvement from baseline, but no inactive disease; and poor response: less than 50 percent improvement from baseline or discontinuation earlier due to ineffectiveness or intolerance.

Of the 262 patients, 85 (32 percent) were considered excellent responders after 15 months of treatment; a total of 85 patients (32 percent) were considered poor responders; and the remaining 92 patients were considered intermediate responders. Compared with achieving an intermediate or poor response, achievement of an excellent response was associated with lower scores on measures of disability at study entry; low number of DMARDs (including methotrexate) used before introduction of etanercept; and younger age at onset. Compared with achieving an intermediate or excellent response, achievement of a poor response was associated with systemic JIA and female sex.

Within the first 15 months of treatment, 119 patients experienced 1 or more adverse events (infectious, noninfectious, or serious; including 37 patients with an excellent response, 36 with an intermediate response, and 46 with a poor response) and 53 patients reported at least 1 infectious adverse event or an infectious serious adverse event. Sixty-one patients discontinued etanercept treatment within the first 15 months of treatment, including 4 with an excellent response, 0 with an intermediate response, and 57 with a poor response.

"In a secondary analysis of 262 patients with a median follow-up of 35.6 months after initiation of etanercept, a range of 37 percent to 49 percent of patients reached inactive disease. [Average] drug survival [i.e., average duration from start until first discontinuation due to ineffectiveness or adverse events] was 49.2 months for patients with an excellent response after 15 months, 47.5 months for patients with an intermediate response, and 17.4 months for patients with a poor response," the authors write.

During etanercept treatment, patients experienced a total of 31 serious, 99 infectious, and 179 noninfectious adverse events.

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