DXA Misses Bone Data In Juvenile Arthritis

BY DIANA MAHONEY
New England Bureau

Assessment of bone status with dual-energy x-ray absorptiometry alone may be an insufficient indicator of skeletal health in juvenile arthritis patients, reported Dr. Helena Valta and colleagues.

Although bone mineral density (BMD) and height *z* scores for a group of glucocorticoid-treated children with juvenile idiopathic arthritis (JIA) suggested normal growth and low prevalence of osteoporosis, spinal imaging uncovered a high prevalence of asymptomatic vertebral fractures, indicating that osteoporosis remains a concern in this population, according to Dr. Valta of the University of Helsinki and colleagues.

Multiple studies have demonstrated systemic skeletal complications in children with juvenile idiopathic arthritis as a consequence of both active disease and the medications used to treat it, the authors wrote. The introduction of new antirheumatic drugs in recent years has allowed for therapeutic alterations, including glucocorticoid dose reductions that might mitigate skeletal damage.

In a study designed to determine whether current treatment regimens have led to improved overall skeletal health in children with JIA, the investigators evaluated growth and bone health in 62 children with JIA treated with glucocorticoids and multiple drug combinations. The study included 19 boys, median age 11.8 years, who fulfilled the revised criteria for JIA; they were followed since diagnosis at Helsinki University's Pediatric Rheumatology Outpatient Clinic at least 2 years prior to the study (J. Rheumatol. 2007 Feb. 15 [Epub ahead of print]).

During the course of their disease, all had been treated with systemic glucocorticoids for at least 3 months; 12 children received combination therapy with glucocorticoids and methotrexate only; and 50 children received glucocorticoids, methotrexate, and additional antirheumatic agents, including 20 children treated with tumor necrosis factor–α (TNF-α) antagonists for treatment-resistant JIA, the authors reported. Four had nonvertebral fractures resulting from low-energy injuries after their JIA diagnosis. None had previously diagnosed compression fractures.

The median duration of systemic glucocorticoid treatment was 24 months, and the median cumulative dose (calculated as prednisolone) and weight-adjusted dose were 2.2 g and 88 mg/kg, respectively. All of the children were assessed clinically by a pediatric rheumatologist and all underwent dual-energy x-ray absorptiometry (DXA) scans to assess bone mineral content and areal BMD (aBMD) of the lumbar spine, left femoral neck, total hip, and whole body. Instant vertebral assessment (IVA) images of the lateral and posteroanterior spine were obtained to detect vertebral compression fractures.

A review of anthropometry and imaging data showed that all but two of the patients were of normal stature at study assessment and only a minority had bone age-corrected aBMD *z* scores indicative of significant osteopenia or symptomatic osteoporosis. "The bone age-adjusted aBMD *z* score was below –1.0 and below –2.0 at the lumbar spine in 12 and in 3 patients, respectively, and at the hip in 13 patients and in 1 patient, respectively," the authors reported.

However, the IVA images demonstrated abnormal vertebral morphology suggestive of compression fractures in six patients (10%). Five had anterior wedge deformity, and one had a compression deformity affecting the anterior, middle, and posterior heights of the vertebrae, according to the authors. There were no statistically significant differences in the duration of glucocorticoid treatment or weight-adjusted cumulative glucocorticoid dose in any patients with abnormal vertebral findings, versus patients who had normal vertebral morphology, they wrote.

An evaluation of bone health correlates in the entire study population showed no link between aBMD and disease characteristics, combination therapies at the time of assessment, or cumulative glucocorticoid dose.

While the findings suggest current treatments have led to improved overall skeletal health in children with JIA, the detection of vertebral compression fractures and some subnormal BMD readings in the cohort "are evidence for the significant potential risks of JIA to normal bone health," the authors wrote. "More attention needs to be paid to preventive measures such as optimizing vitamin D and calcium intake, and encouraging weight-bearing physical activity in patients with satisfactory disease control."

The study highlights bone health evaluation questions in this at-risk population, for which there are currently no standards. "We don't know enough about bone health in these children yet to be completely confident in simply using standard DXA studies; however, better tools are not routinely available yet, and DXA provides more information than routine x-rays," said Dr. Thomas J.A. Lehman, chief of pediatric rheumatology at the Hospital for Special Surgery in New York. "If DXA [measures] are way off, everyone agrees on therapy," he said, but no consensus exists on the interpretation of mild abnormalities in arthritic children. ■

Monoclonal Gammopathy Found In Child With Chédiak-Higashi

BY DOUG BRUNK
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CARMEL, CALIF. — A complication involving monoclonal gammopathy in a child who received cord blood for treatment of Chédiak-Higashi syndrome may be the first of its kind, Dr. Kevin Wang said at the Western regional meeting of the American Federation for Medical Research.

Dr. Wang, a visiting fellow in the department of pediatrics at the University of California, Los Angeles, Medical Center, discussed what is believed to be the first reported case of monoclonal gammopathy in a young boy following cord blood transplantation.

Over a year after IVIG infusions ended, the patient had an elevated IgG level of 4,000 mg/dL.

DR. WANG

At 16 months of age, the boy was diagnosed with Chédiak-Higashi syndrome (CHS), but his parents declined bone marrow transplantation at that time. At age 2 years, he was started on granulocyte colony-stimulating factor for neutropenia and remained stable for the next 4 years.

At age 6 years, the boy presented to Dr. Wang and his associate, Dr. Robert L. Roberts, with pancytopenia, fever, respiratory distress, mental status changes, seizure activity, and hepatosplenomegaly.

Dr. Wang and Dr. Roberts determined that the boy was in the accelerated phase of CHS. Bone marrow biopsy showed cytoplasmic inclusions, granulocytes, and hemophagocytic cells. Brain MRI showed nonspecific focal hyperintensities in the white matter, which is consistent with lymphohistiocytic infiltration.

The boy received three courses of IV immunoglobulin (IG), then methylprednisolone for 10 days, and dexamethasone for 2 months, after which he remained on a maintenance dose of dexamethasone until the time of splenectomy that was necessitated by persistent thrombocytopenia. Over the next several weeks, the boy's condition improved.

A repeat bone marrow biopsy revealed rare hemophagocytic cells and a repeat MRI showed significant improvement, suggesting that he was in remission from the accelerated phase. Dr. Wang reported that the boy then received a 10/10 match cord blood transplantation. He appeared to engraft successfully, leading to discontinuation of his routine infusions of IVIG. About 15 months later, the boy was clinically stable but he had an elevated IgG level of 4,000 mg/dL. Immunoelectrophoresis revealed that he had developed a monoclonal IgG gammopathy.

"The patient is clinically stable but he is being monitored closely for the risk of developing lymphoma," Dr. Wang said. ■

Treatment Adherence in JIA Influenced By Parents' Perception of Effectiveness

BY DIANA MAHONEY
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Children with juvenile idiopathic arthritis are more likely to follow their medication and exercise regimens when their parents perceive that the treatments are helpful.

Adherence can be problematic in juvenile idiopathic arthritis (JIA) treatment, because therapy often is complicated, reported Debbie Ehrmann Feldman, Ph.D., of Montreal Children's Hospital, and her associates (Arthritis Rheum. 2007;57:226-33).

To evaluate the potential factors influencing patient adherence to JIA treatment over time, the investigators surveyed the parents of 175 children (mean age 10 years) with a mean disease duration of 4 years. The patients were receiving JIA treatment at two pediatric hospitals in Canada.

Several times over a 12-month period, parents completed questionnaires including the Parent Adherence Report Questionnaire; the Symptom Checklist-90-Revised; the Coping Health Inventory for Parents (CHIP); and the Child Health Assessment Questionnaire (CHAQ). The investigators also included clinical information obtained from each child's chart, and input from clinicians and physical therapists about prescribed treatment and opinions about patient adherence.

In terms of treatment adherence, the values for perceived adherence to medication were consistent between patients and physicians, whereas the perceived adherence to exercise was higher among parents than physical therapists. Parent-reported adherence to medication use ranged from 86 to 92 on a 100-mm visual analog scale in the PARQ, and the physician ratings for medication adherence ranged from 90 to 92. Perceived exercise adherence was substantially lower, with parent-reported values ranging from 54 to 64 and physical therapist ratings ranging from 35 to 50, the investigators stated.

"Adherence to medication was higher for participants who perceived exercise to be highly beneficial, as well as those who had children with lower disease severity [as measured by active joint count]," the authors wrote, commenting on findings from their generalized estimating equation analysis done to identify factors from all of the survey instruments associated with perceived treatment adherence. "Adherence to exercise was higher for participants who perceived exercise to be a highly beneficial treatment for JIA, for participants with younger children, and for participants with a child who was involved in the responsibility for his or her treatment."

The findings underscore "the importance of patients' beliefs affecting adherence," the authors wrote, noting that management strategies should incorporate explanations about the treatments, how they work, and why they are important. ■

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