Dynamic Wedging Improves Knee Osteoarthritis

BY KATE JOHNSON
Montreal Bureau

Prague — Individually calibrated shoes that provide dynamic wedging can significantly improve pain and function in patients with knee osteoarthritis—sometimes immediately, according to a study reported Dr. Yuval Ran at the 2006 World Congress on Osteoarthritis.

"We have clearly demonstrated clinical efficacy. Immediate relief of pain in some patients enabled them to walk painlessly during real-life activity thus reacquiring neuromuscular skills and balance," he said at the meeting, which was sponsored by the Osteoarthritis Research Society International.

Dr. Ran, from the Assaf Harofeh Medical Center in Tel Aviv, has been treating patients with the APOS system footwear from Atlantic Prosthetic Orthotic Services Ltd. in Kilcolgan, Ireland, for about 2 years, he said, adding that he has no conflict of interest to disclose.

Unlike other active osteoarthritis (OA) interventions, which usually require intensive physical therapy programs and result in low compliance, the APOS system, which involves semispherical, individually calibrated implants in special footwear, often relieves pain immediately and thus results in extraordinary compliance, he said.

"Many patients wear the shoes all the time because we can't instruct them not to wear something that relieves pain," he said, noting that the implants are designed to improve age-related loss in neuromuscular control and resulting muscle-weakness and stress on the knee joint.

The semispherical rubber devices that are placed on the soles of the shoes at the hindfoot and midfoot can move medially and laterally and may be individually adjusted in order to balance loading, he explained.

The wedging implants are designed to reduce age-related stress on the knee.

Photos courtesy Dr. Yuval Ran/Dr. Avi Elbaz/Dr. Amit Mor

Couple with OA demonstrate the footwear with wedging.

In a randomized trial of 61 knee OA patients, mean age 66 years, treated for 8 weeks with the APOS implants or placebo, Dr. Ran and his colleagues noted a "highly significant" 70% decrease in pain in the treated group, measured with the Western Ontario and McMaster Universities Osteoarthritis (WOMAC) index and a 33% improvement in function according to the Aggregated Locomotor Function (ALF) scale, compared with no improvements in the control group.

Patients were advised to start the treatment with 10 minutes of indoor wear, building up to 30 minutes of outdoor walking—however, he said the majority of patients chose to wear the shoes most of the time because of the pain relief provided. Evaluation was performed at baseline, 4 weeks, and 8 weeks.

Patients also were supervised four times during the study to make adjustments to the shoes, if necessary. Patients in the placebo arm wore shoes that looked identical except without the spheres on the soles. ■

Everyday Walking Shoes May Increase Osteoarthritis Risk

BY KATE JOHNSON
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Courtesy Dr. Najia Shakoor

A man undergoes gait analysis in his normal walking shoes.

Prague — In patients with osteoarthritis—and even in healthy subjects—standard walking shoes result in significantly more knee adduction compared with barefoot walking or walking with a specially designed "unloading" shoe, reported Dr. Najia Shakoor in a poster at the 2006 World Congress on Osteoarthritis.

"High [dynamic] loading has been associated with both the presence and progression of OA," Dr. Shakoor commented in an interview, noting that increased loading results in increased adduction.

In a previous study, Dr. Shakoor and colleagues from Rush Medical College, Chicago, demonstrated that in subjects with knee OA, walking barefoot significantly decreases peak external knee adduction compared with walking in standard walking shoes (Arthritis Rheum. 2006;54:2923-7).

The group subsequently designed a shoe to mimic the unloading characteristics of barefoot walking and tested it in a cohort of 26 healthy subjects.

The 18 females and 8 males, with a mean age of 42 years, received gait evaluations while wearing their self-selected normal walking shoes.

All subjects also had a gait analysis while walking barefoot, and 19 were analyzed while they wore the specially designed unloading shoes. "The shoes are very flat and thin-soled, with a soft upper that wraps around the foot like a glove," said Dr. Shakoor.

"There are slit lines in the sole to conform to the major natural flexion points of the foot."

Although a provisional patent has been filed and the group hopes the shoes will one day be marketed as a therapeutic intervention, they do not currently have any company affiliations.

Overall, a significant 13% reduction in subjects' external knee adduction was noted during their walking while barefoot and with the unloading shoes, compared with walking in their normal walking shoes.

The researchers also have data showing similar unloading effects of the shoes in patients with OA, according to Dr. Shakoor, speaking at the conference, which was sponsored by the Osteoarthritis Research Society International. ■

Severe RA Ups Risk for One Subtype Of Diffuse Large B-Cell Lymphoma

BY BARBARA J. RUTLEDGE
Contributing Writer

The increased lymphoma risk seen in patients with severe rheumatoid arthritis appears to involve a specific subtype of diffuse large B-cell lymphoma that arises from activated peripheral blood B cells.

Dr. Eva Baecklund of Akademiska Hospital in Uppsala, Sweden, and her associates identified 139 RA patients with diffuse large B-cell lymphoma from within a population-based case-control study of 378 RA patients with lymphoma. The RA patients with lymphoma were originally identified from linkage of the nationwide Swedish Inpatient Register with the Swedish Cancer Register.

Diffuse large B-cell lymphoma (DLBCL) can be classified into two major subtypes based on gene expression profiles. One tumor subtype expresses genes characteristic of germinal center (GC) B cells. The other tumor subtype (non-GC) expresses genes seen in activated peripheral blood B cells.

In this study, the cases of DLBCL were classified as GC or non-GC based on immunohistochemistry using a three-marker system. CD10, Bcl-6, and interferon regulatory factor 4 (IRF-4, also known as multiple myeloma oncogene 1) were tested. Staining of 30% or more of tumor cells was defined as positive.

Investigators reviewed the original slides and paraffin-embedded lymphoma tissues from pathology laboratories and reclassified the tumors according to the World Health Organization classification system. Immunohistochemical staining for CD10, Bcl-6, and IRF-4 antibodies was performed on paraffin-imbedded tissue. Gene expression profiling could not be performed because of the lack of frozen tissue.

All tumors that stained positive for CD10, whether positive or negative for Bcl-6, were classified as GC-like. Tumors that stained negative for both CD10 and Bcl-6 were classified as non–GC-like. Tumors that showed negative staining for CD10 but positive staining for Bcl-6 were tested for IRF-4. CD10-negative/Bcl-6–positive tumor cells that showed positive staining for IRF-4 were classified as non-GC subtype, and those that showed negative IRF-4 staining were classified as GC subtype.

DLBCL tumors from 42 patients (30%) were identified as GC subtype, and DLBCL tumors from 97 patients (70%) were identified as non-GC subtype. Women were the majority in both the GC and non-GC groups (57% and 60%, respectively). The mean age of RA onset was around 50 years in each group. The mean age at lymphoma diagnosis was 70 years (range: 32-84 years) for patients with GC subtype DLBCL, compared with 71 years (range: 48-89) for patients with non–GC subtype DLBCL.

There were no significant differences between the two groups in RA functional class, disease activity, or RA treatment. Compared with patients with GC subtype DLBCL tumors, a higher proportion of patients with non–GC subtype DLBCL tumors had RA disease activity in functional classes III and IV, but the trend did not reach statistical significance ($P = .07$).

Tumor stage differed significantly in patients with non–GC subtype tumors, compared with those with GC subtype tumors ($P = .005$). A higher proportion of patients with non-GC subtype DLBCL tumors (60 patients; 64%) had disseminated lymphoma (Ann Arbor stage IV), compared with patients with GC DLBCL tumors (15 patients; 38%). Among patients in whom extranodal involvement could be assessed, significantly more patients with non-GC DLCBL tumors (72/93; 77%) had extranodal involvement, compared with patients with GC DLCBL tumors (25/39; 64%; $P = .03$).

In RA patients with advanced lymphoma, the prognosis was worse if the tumor subtype was non-GC.

The 5-year overall survival was 33% for patients with GC-subtype DLCBL tumors, compared with 16% for patients with non–GC subtype DLCBL tumors, the investigators wrote (Arthritis Rheum. 2006;12:3774-81). ■