Vitamin D, Extended Physiotherapy Prevent Second Hip Fracture

BY KERRI WACHTER

DENVER — Extended physiotherapy significantly reduced the rate of falls among patients with a prior hip fracture, and high-dose vitamin D significantly reduced the rate of hospital readmissions in a study of 173 patients.

A program of extended physiotherapy reduced the fall rate by 25%, compared with standard postfracture physiotherapy; high-dose vitamin D therapy reduced the hospital readmission rate by 39%, compared with a lower dose, the researchers found.

"The extended physiotherapy program, together with 2,000 IU vitamin D, has complementary benefits on post–hip fracture care," Dr. Heike Bischoff-Ferrari said at the annual meeting of the American Society for Bone and Mineral Research.

The researchers enrolled 173 patients after their first acute hip fracture. Of these, most (79%) were women. Their mean age was 84 years, and 77% were living in the community. Half (51%) of the patients had severe vitamin D deficiency with serum 25-hydroxyvitamin D levels below 30 nmol/L; almost all (98%) had serum 25-hydroxyvitamin D levels below 75 nmol/L.

Patients were randomized to receive extended physiotherapy or standard physiotherapy. Extended physiotherapy consisted of supervised therapy for 1 hour per day during acute care, plus an unsupervised home program of exercises to perform regularly for 1 year. The standard therapy consisted of supervised therapy for 30 minutes per day during acute care. Physiotherapy included activities such as getting up from a chair, one-leg stands, climbing up and down stairs, and a rubber band exercise program for upper arm strength.

Patients were also randomized to receive vitamin D supplementation at 2,000 IU or 800 IU vitamin D3 per day. All patients received calcium.

Clinical assessment, which included laboratory tests and functional evaluations, took place at baseline and at 6 and 12 months' follow-up. Falls and readmissions were assessed by monthly calls to patients, patient calls to a hotline, and patient diaries.

The primary end point was the rate of falls over 12 months. The secondary end point was the rate of hospital readmission over 12 months.

In all, 86 participants were included in the high-dose vitamin D group and 87 were included in the lower-dose vitamin D group; 87 participants were included in the extensive physiotherapy group, and 86 were included in the regular physiotherapy group. The groups did not differ by age, gender, BMI, cognitive function, baseline 25-hydroxyvitamin D levels, and Charleston Comorbidity Index scores.

The researchers documented 212 falls in 92 participants. Of these, 41% fell once, 26% fell twice, 19% fell three times, and 14% fell more than three times. The rate of falls per patient-year was 1.43. There were 22 new nonvertebral fractures, nine of which were in the contralateral hip.

There were 74 readmissions among 54 participants. Of these, 72% had one readmission, 20% had two, and 8% had three. The rate of readmission was 50%.

Extended physiotherapy reduced the rate of falls by 25%, compared with regular physiotherapy, a significant reduction. Similar improvements were seen in function. However, extended physiotherapy did not reduce the rate of hospital readmissions.

There was no difference in the fall rate for the two vitamin D groups, but high-dose vitamin D did reduce the rate of hospital readmission by 39%, which was significant. There was also a significant 60% reduction in fall-related injuries. "This was mainly driven by a nonsignificant reduction in repeat nonvertebral fractures by 52%," said Dr. Bischoff-Ferrari of the Centre on Aging and Mobility at the University Hospital Zurich.

The rate of readmissions due to infections decreased a significant 90%. Fall-related injuries went down 47% (which was nonsignificant) among those in the extended physiotherapy group, a decrease primarily driven by a nonsignificant 56% reduction in repeat nonvertebral fractures, said Dr. Bischoff-Ferrari, who is also a visiting scientist in the Bone Metabolism Laboratory at Tufts University, Boston.

In the first year after a hip fracture, an estimated 5%-10% of patients fracture the other hip and 30% are readmitted to acute care. Half of these patients are left with permanent functional impairment, a quarter require long-term care, and 10%-25% die, she said.

Dr. Bischoff-Ferrari reported having no conflicts of interest.■

CLINICAL GUIDELINES FOR FAMILY PHYSICIANS

Physical Activity in Older Adults

BY NEIL S. SKOLNIK, M.D. AND ADAM T. CHRUSCH, M.D.

Older Americans represent the least physically active subgroup of our population. They are also the group that generates the highest medical cost. Research suggests it is possible to decrease medical expenditures for older patients within 1 year of initiating a recommended exercise program. The American College of Sports Medicine and the American Heart Association have published useful recommendations on physical activity in older adults, defined as those older than the age of 65 years or between the ages of 50 and 64 years if comorbid conditions exist (Med. Sci. Sports Exerc. 2007;39:1435-45). Here's a quick look at what they advise:

Guidelines are most useful when they are available at the point of care.

A handheld computer version of this guideline is available for download at www.redi-reference.com.

Clear Benefits

Plenty of evidence backs the benefits of exercise to promote improvement among patients with many chronic conditions, including coronary artery disease, hypertension, peripheral vascular disease, type 2 diabetes, obesity, hyperlipidemia, osteoporosis, osteoarthritis, claudication, and chronic obstructive pulmonary disease. Exercise has been shown to decrease the risk of falls and injuries from falls, and emerging evidence suggests a role in preventing or delaying cognitive impairment.

Primary care physicians should help patients develop a plan to increase their activity to recommended levels at a pace that decreases the risk of injury or complications. Taking a slow and stepwise approach allows patients to reach attainable goals, and these incremental successes should improve compliance with the exercise program. The following are the minimum activity recommendations suggested by the American College of Sports Medicine and the American Heart Association:

Aerobic Activity and Flexibility

Older adults should have 30 minutes or more of moderate intensity aerobic activity 5 days per week or 20 minutes or more of vigorous aerobic activity 3 days per week. Moderate intensity aerobic activity should be rated 5-6 on a 10-point effort scale and should produce a noticeable increase in heart rate and breathing. Vigorous activity should be rated 7-8 and should produce a large increase in heart rate and breathing. People who do not understand this rating scale or the level of activity that is needed should start their exercise program with the supervision of a personal trainer or a physical therapist. Because of differences in fitness level, different patients will have different activity levels that will produce the desired intensity. For this reason, each exercise plan must be tailored to the individual patient.

Flexibility exercises such as stretching should be performed after aerobic activity to stretch while muscles are warm and active. Every major muscle group should be stretched, holding for 10-30 seconds and repeating three or four times. Ten minutes should be set aside for stretching on every aerobic activity day.

Muscle Strengthening

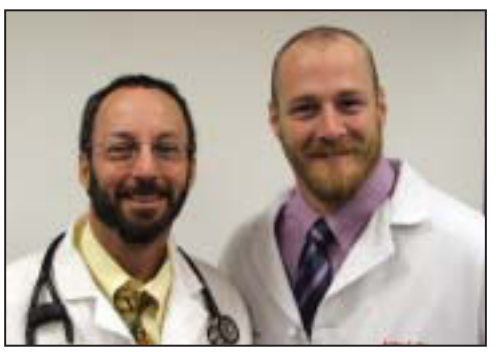
To prevent a decline in lean muscle mass and decrease the risk of falls, resistance training has been added to the recommendations. Resistance activities include progressive weight training or weight-bearing calisthenics. Ten to fifteen repetitions should be performed for each major muscle group. The level of effort should be moderate to high, rating 5-7 out of 10. These exercises should be performed on two or more nonconsecutive days. Focusing on the core muscle groups, including abdominals, hip flexors, lower back, and legs, will increase mobility and balance.

Balance

Balance exercises should be performed by older adults who have an increased risk of falls. Most of the time, balance exercise is initiated during a course of physical therapy and continued during a home exercise program. A simple example of this would be to stand on one foot. Initially one would use a table for support, but as balance improves the person could progress to using no support or even standing with their eyes closed. People with more resources may find yoga, Pilates, or dance classes to be more engaging. These classes also combine aspects of flexibility and resistance training mentioned above. Balance activities such as dance, yoga, or Pilates have not been validated in the literature, but may be a viable alternative to balance exercises.

The Bottom Line

Virtually all older adults should be physically active. The evidence suggests that exercise should be discussed at every patient encounter. Most older adults should strive to exceed the minimum recommended activity level. Just 30 minutes a day of exercise has the potential to substantially improve the health of the population, which could make it one of the simplest and most effective ways to curtail the rising cost of health care.



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