Younger Soldiers at Higher Risk of Osteoarthritis

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VIEW ON THE NEWS
Flawed Trial Design Undermines Findings

The recent finding that active-duty soldiers are at a significantly elevated risk for osteoarthritis may have relevance for the civilian population.

Data from 10 years of military medical surveillance data showed that active-duty U.S. military service members who are 40 years of age or older are twice as likely to be diagnosed with osteoarthritis (OA) as their peers in the general population.

The study also found that, when researchers controlled for other factors, women had a 20% higher rate of OA compared with men; the incidence of OA in service members 40 years or older was almost 19 times higher than service members less than 20 years old; members of Army had the highest incidence rate of OA, followed by Air Force, Marine Corps, and Navy; and junior service members had the highest incidence rate of OA, followed by senior enlisted, senior officers and junior officers.

Courtesy Spc. Amburr J. Reese, 114th Public Affairs Detachment/U.S. Army

Chief Warrant Officer Olga Elliot keeps a good distance in front of other racers during the 5-km Veterans of Foreign Wars Veterans Day Run, at Camp Victory in Baghdad.

The study found 108,266 incident cases of physician-diagnosed OA in the military's Defense Medical Surveillance System (DMSS) between 1999 and 2008. Among the study's other findings were that the incidence of OA was most likely to be increased among soldiers who were women, black, somewhat older, in the Army rather than another branch of the military, or of enlisted rank (Arthritis Rheum. 2011;63:2974-82).

A number of factors may explain the increased incidence of OA among soldiers. Traumatic knee injuries are common among military service members, according to the study's authors and studies by other groups (Am. J. Sports Med. 2010;38:1997-2004; Mil. Med. 2007;172:90-1; J. Bone Joint Surg. Am. 2003;85-A:1656-66; Am. J. Prev. Med. 2000;18(suppl 3):33-40).

This population is "very active, constantly traveling, training, attending sporting activities, so they're engaged in high-demand activities," said Kenneth L. Cameron, Ph.D., the lead author of the study, and director of orthopedic research at the Keller Army

Community Hospital, West Point, N.Y. Also, several studies of professional athletes, such as soccer players, have shown that knee and hip OA are common among them (Foot Ankle Spec. 2011 Sep 30. [Epub ahead of print]).

Osteoarthritis, the most common form of arthritis, is one of the leading causes of disability and medical discharge in the military, according to the authors. "The rates of OA can affect force readiness," said Dr. Cameron.

Dr. Cameron and his team queried 10 years of data in DMSS, which captures almost all medical visits for all four branches of military, by sex, race, age, branch of military service, and rank. They used International Classification of Disease, Ninth Revision (ICD-9) code 715 (osteoarthrosis and allied disorders.)

The results showed that between 1999 and 2008, there were 108,266 incident cases of OA, and 13,768,885 person-years of follow-up were documented. The overall incidence rate was 7.86 per 1,000 person-years. That is roughly an average of 10,827 incident cases of OA each year among 1,376,889 active duty personnel.

For comparison to the general population, the authors used Canadian studies by Dr. Jacek A. Kopec and colleagues (J. Rheumatol. 2007;34:386-93; Arthritis Rheum. 2008;59:929-34). The Kopec groups' findings, when calculated for the comparable age group, showed an OA incidence rate of 7.19 per 1,000 person-years in the general population.

Dr. Cameron said the lack of comparable studies to his study groups is "likely because the U.S. general population does not have free and open access to healthcare like they do in Canada and active duty U.S. service members do through the Military Health System."

So using available data that were most comparable to the study's design and criteria, the authors concluded that rates of OA were significantly higher in the military populations when compared with similar age groups in the general population.

Comparisons also showed that the incidence rate of OA in military service members in the 20-24 year age group was 26% higher than those in the general population.

Dr. Amanda Nelson noted in an interview that "[t]his study is a nice addition to the literature. ... It gives us an idea that, despite all of its caveats, members of the military are at risk for osteoarthritis at a younger age compared to the general population."

"So the question is, what do we do for younger people with osteoarthritis? Is there a way to slow progression? We don't yet have a lot of proven treatments for osteoarthritis," said Dr. Nelson, of the Thurston Arthritis Research Center, University of North Carolina at Chapel Hill.

Epidemiological studies of OA in the general population have shown that old age, female gender, being overweight or obese, knee injury, repetitive use of joints, black race, muscle weakness, and genetics play a role in OA development (Clin. Geriatr. Med. 2010;26:355-69).

Meanwhile, no medications have proven effective in preventing OA, and research on cartilage repair is still developing.

Black race was also shown to be associated with higher incidence rate of OA, compared with white race and those in the "others" category.

A few studies, including several by Dr. Nelson's group, have shown that blacks are more likely to have severe knee and hip OA. "This study confirms our findings," she said.

The authors cited several limitations, including potential for coding errors, potential for information bias due to misclassification of the outcome of interest, lack of incidence rates for specific sites, and definitions used for incident cases of OA (physician-diagnosed vs. patient self-report, radiographic criteria or combination of both.)

Despite its limitations, some experts believe that the study's findings support those of previous reports on OA.

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calendar

Nov 12 - 16 Banff,	North American Primary Care Research Group (NAPCRG): Annual Meeting
Nov 12 - 19 Departing Honolulu, HI	Family Medicine: Pulmonology and Sleep Disorders
Nov 12 - 17 Marrakesh,	World Congress of Neurology (WCN)
Nov 12 - 16 Washington, DC	Society for Neuroscience (SFN): Neuroscience 2011
Nov 12 - 16 San Francisco, CA	American Association for Cancer Research (AACR)/ National Cancer Institute (NCI)/ European Organization for Research and Treatment of Cancer (EORTC): Molecular Targets and Cancer Therapeutics
Nov 13 - 16 Orlando, FL	American Heart Association (AHA): Scientific Sessions 2011
Nov 13 - 20 Departing Tampa, FL	Internal Medicine Review
Nov 13 - 16 Tucson, AZ	Western Surgical Association (WSA): Annual Meeting: Annual Meeting
Nov 14 - 17 Sapporo,	International Society for Nutraceuticals and Functional Foods (ISNFF): Annual Conference
Nov 14 - 18 Sarasota, FL	American Medical Seminars: Dermatology for the Non-Dermatologist

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Dr. Thomas M. Link, professor of radiology and clinical director of musculoskeletal and quantitative imaging research at the University of California, San Francisco, said, "The key message is that prevention is more important than anything else."

Several programs such as RunSafe Healthy Runners Clinic at the University of California, San Francisco, try to reduce the odds of injury by making slight modifications in how the athletes run, and their work has proven effective, said Dr. Link.

"I think what we found in the study is consistent with what we expected. The next question is why that is, and what are the modifiable risk factors," said Dr. Cameron.

The authors reported no conflicts of interest.

View on the News

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The authors start with an incredible data bank. However, although this is one of the largest studies of its kind, it does have some significant limitations.

For one, the study compares its findings in a U.S. military population to Canadian epidemiologic data. In addition, the study relies solely on physician-diagnosed osteoarthritis without the benefit of having the diagnosis confirmed by clinical or radiographic criteria, like those of the American College of Rheumatology.

Perhaps most troubling is that the researchers do not specify how many cases of osteoarthritis occurred at each anatomic site (knee vs. hip vs. hand vs. other). Rather, they combined all the anatomic subsets of the disease under the ICD-9-DM classification code 715, which covers all osteoarthrosis and allied disorders. Because the researchers have lumped osteoarthritis at all sites together, I have trouble drawing any conclusion from the study.

Dr. Roy D. Altman is professor of medicine at the University of California, Los Angeles. He has no relevant conflicts of interest to disclose.

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