Dynamic Chiropractic

PEDIATRICS

Competitive Sports in Youth May Predispose to Disk Degeneration

BUT ARE DEGENERATIVE DISKS CAUSATIVE OF LOW BACK PAIN?

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In a recent study, it was found that athletes who trained from youth were more likely to have degenerative disks (DD) compared to nonathletes.[1] Comparing sports such as baseball, swimming, basketball, Kendo, soccer, and running, continuous competitive baseball and swimming were the most associated with DD. All of the participants in the above sports significantly experienced more low back pain than nonathletes in the study.

Consideration of gender and obesity did not change the statistics, although some studies have shown that while height or weight does not affect DD, obesity does.[2] It was thought that particular sports resulted in greater DD based on different postures and actions specific to each sport. Studies have shown that weight-lifters and soccer players have increased DD compared to shooters[3] and DD is significantly more common in male elite gymnasts than in nonathletes.[4] It was thought that baseball players and swimmers experienced more DD due to the frequent rotations of the trunk, but no signs of accelerated DD have appeared in competitive runners or runners and cross-country skiers at the recreational level.[3]

There is a major question about all these studies. Are degenerated disks causative of low back pain? In the cervical spine, if degenerative disease is a cause of pain, it should be more frequent at older ages than 49, which is the peak time of incidence. Degenerative changes on cervical MRI do not correlate with neck pain, since these findings are commonly found in asymptomatic people.[5]

A study was performed to determine if lumbar disc degeneration, diagnosed in young patients with low back pain using MRI, could predict chronic pain, disc herniation, or functional disability after 17 years of follow-up.[6] In this study, early DD in adolescent patients with low back pain predicted the evolution of enhanced DD and herniation in adulthood, but was not associated with severe low back pain or increased frequency of spinal surgery. Another study[7] demonstrated that individuals with disc degeneration soon after the phase of rapid physical growth not only have an increased risk of recurrent low back pain at this age, but also a long-term risk of recurrent pain up to early adulthood.

In another pertinent study, 67 asymptomatic individuals with no history of back pain underwent magnetic resonance imaging of the lumbar spine. Seven years later, they were sent a questionnaire about the status of their back regarding pain. Fifty responded and a repeat MRI was performed for 31 of these subjects. Two neuroradiologists and one orthopedic spine surgeon interpreted the original and repeat scans in a blinded fashion, independent of clinical information.

Of the 50 subjects who returned the questionnaire, 29 (58 percent) had no back pain. Low back pain developed in 21 subjects during the seven-year study period. The 1989 scans of these subjects demonstrated normal findings in 12, a herniated disc in five, stenosis in three, and moderate disc

degeneration in one. Eight individuals had radiating leg pain; four with normal findings on the original scans, two with prior spinal stenosis, one with a prior disc protrusion, and one with a prior a disc extrusion. In general, repeat magnetic resonance imaging scans revealed a greater frequency of disc herniation, bulging, degeneration, and spinal stenosis than did the original scans.

It was concluded that the findings on magnetic resonance scans were not predictive of the development or duration of low back pain. Individuals with the longest duration of low back pain did not have the greatest degree of anatomical abnormality on the original (1989) scans.[8]

It is apparent that if there are motor and sensory signs and pain along a particular dermatome below the knee, a positive MRI with associated disc findings is probably relevant. Otherwise, a DD in the lumbar spine, as in the cervical spine, is not necessarily relevant.

References

1. Hangai M, Kaneoka K, Hinotsu S, et al. Lumbar intervertebral disk degeneration in athletes. *Am J Sports Med,* September2009;37(1):149-55.
2. Like M, Solovieva S, Lamminen A, et al. Disc degeneration of the lumbar spine in relation to overweight. *Int J Obes (Lond),* August 2005;29(8):903-8.
3. Videman T, Sarna S, Battie MC, et al. The long-term effects of physical loading and exercise lifestyles on back-related symptoms, disability, and spinal pathology among men. *Spine,*1995;20:699-709.
4. Sward L, Hellstrom M, Jacobsson B, et al. Disc degeneration and associated abnormalities of the spine in elite gymnasts. A magnetic resonance imaging study. *Spine,* April 1991;16:437-43.
5. Guzman J, Haldeman S, Carroll LJ, Carragee EJ, et al. Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders. From Concepts and Findings to Recommendations. *Spine,* April2008;33(4S):S199-213.
6. Waris E, Eskelin M, Hermunen H, Kiviluoto O, Paajanen H. Disc degeneration in low back pain: a 17-year follow-up study using magnetic resonance imaging. *Spine*, March 2007;32(6):681-4.
7. Salminen JJ, Erkintalo MO, Pentti J, Oksanen A, Kormano MJ. Recurrent low back pain and early disc degeneration in the young. *Spine*, July 1999;24(13):1316-21.
8. Borenstein DG, O'Mara JW Jr, Boden SD, et al. The value of magnetic resonance imaging of the lumbar spine to predict low-back pain in asymptomatic subjects; a seven-year follow-up study. *J Bone Joint Surg Am*, September 2001;83-A(9):1306-11.