Case Report

Patient: This Division I football player is a 20-year-old (90kg and 193cm) athlete who received a herniated disk during practice. The following information will explain the mechanism of injury, clinical assessments, radiographic findings, diagnosis, treatment, and return to play to provide additional information to this athlete’s unique injury.

Mechanism of Injury: Although lumbar disc herniations commonly occur, they are not easily reproduced in a research setting. However, it is notable that in published studies in which disc herniations were produced in animal or human lumbar spine specimens, most required some component of spine flexion. A study presented in 2001 in the journal "Clinical Biomechanics" demonstrated a link between compression of the spinal joints – technically known as vertical loading – and disc herniation. During practice, the wide receiver was running a route down field with his lomos twisted in order to complete the underthrown pass. As he attempted to do so, a defender jumped up along side him in hopes of an interception but ended up landing on top of 96 points of contact. The other athlete continued to press as the compression on top of being torque in his lumbar spine is what caused his disk to herniate.

Clinical Examination: Succeeding the wide receiver being tackled, the athlete was able to slowly carry himself off the field. After being evaluated immediately on the field, the medical staff determined that the athlete could continue practice as tolerated and was instructed to report to the training room after. The second evaluation determined that the athlete was experiencing low back pain due to the fact that he lacked mobility in his hips. The athlete followed a rehabilitation plan in order to gain some hip mobility. At the end of the week, the athlete reported that his pain began to worsen and that he was starting to experience radiating pain and tightness in his right hamstring. The athletic training staff had previously suggested that the athlete had tight musculature and needed to spend more time stretching and foam rolling. After doing the recommended stretches for 1-week, the medical staff informed the athlete that he would begin to plantarflex his foot. The week following, the athlete noticed something wrong within his Achilles tendon. The receiver was unable to perform a single calf raise as his Achilles tendon continued to hurt. This halted the athlete's ability to plantarflex his foot. It wasn’t until then that the medical staff referred the athlete to the team physician who then diagnosed the injury as radiulopathy, which is a disease of the root of a nerve. The athlete received three treatments for a pinched nerve prior to the last evaluation until the team physician began to get involved, 5 weeks had passed. The athlete underwent a MRI, which resulted in a L4-L5 disc bulge, and a L5-S1 level herniation. The athlete then received surgical intervention on the L5-S1 disk herniation. The surgical intervention included the removal of the herniated nucleus pulposus, and the repair of the annulus fibrosis. The athlete’s ability to plantarflex his foot was restored after the surgical intervention. The athlete was able to continue to rehab and was instructed to work on improving his range of motion.

Rehabilitation and Results

Following the athlete’s surgical intervention, a strategic rehabilitation plan awaited him the next day. This plan includes three phases in which each contain contingencies in order to progress the athlete to the next phase. Phase I (Immediate): Week 1-Week 4 goals included protecting the herniated nucleus pulposus, decreasing inflammation, and avoiding further nerve root damage. Phase II (Early Recovery Phase) included progressing passive extension exercises, early protected activity, and early protected exercises. Phase III (Recovery Phase) included regaining functional strength. The initial session was limited to 10 minutes. If symptoms are no worse after the session and the following day, then speed, duration, and % BW can be gradually increased while monitoring for increases in symptoms during, immediately after, and the following day after each session. The athlete was able to slowly return to practice and begin to plantarflex his foot. The athlete was able to successfully rejoin the team and was instructed to work on improving his range of motion.

Discussion and Summary

Herniated discs are frequently misdiagnosed and are a rare football related injury. However, this type of injury can occur in any high collision and high velocity situation. The injury took almost 5 weeks to subside. Not all herniated discs present the same and have the same recovery time. The mechanism of injury can vary upon situation, but similarly consists of lumbar flexion, axial compression, and axial rotation. The greater the sensory and motor response test is included in the evaluation when it comes to spinal injuries. With this type of injury imaging is important because it can help the athlete to know for sure if an athlete is suffering from a herniated disc. The uniqueness of this injury is unfortunate for the athlete however, the delayed diagnosis and imaging tests had forced prolonged compression on the nerves in which resulted in the athletes Achilles tendon to malfunction. Injuries to the spinal cord are relatively uncommon in the football training room but it is important to understand the severity that can come from misdiagnosing one.

References

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L5-S1 Herniated Disc in a College Football Athlete

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