

A case of spinal cord concussion induced by “Ultimate” sports

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Abstract: A 20-year-old female ran after the disc, turned around and jumped to try to catch the disc at a national “Ultimate” sports athletic competition. When she fell, the back of her neck made direct contact with the ground. Immediately after this impact, she showed tetraplegia with dysesthesia at every extremity. On arrival, her vital signs were stable. Whole body computed tomography revealed no traumatic lesions in either the intracranium or cervical bone. Urgent spinal magnetic resonance imaging disclosed no significant lesions at the spinal cord lesion and no compression of the spinal cord by the disc hernia. On the 2nd hospital day, 14 hours after the accident, her motor weakness completely subsided and she felt only mild grade dysesthesia at both hands. She was discharged on foot that day. “Ultimate” has been thought to be easy and safe to play. However, depending on the position of the body when a player drops to the ground after jumping to try to catch the disc, it may result in occurrence of severe neurological trauma.

Keywords: Ultimate; flying disc; spinal cord injury.

INTRODUCTION

“Ultimate” is a team field sport played with a flying disc (Frisbee) without physical contact between players. A goal is scored when a player catches the flying disc in the end zone of attack. A prominent feature of the modern game is “lying out,” a horizontal dive made to catch or block the disc. Despite its beginnings in the American counterculture in the late 1960s, there has been only one report which has investigated the epidemiology of Ultimate sports [1]. According to that report, the initial injury rate in college Ultimate players was 12.64 per 1000 athlete-exposures; males were more likely than females to be injured when laying out for the disc, and males were more likely to incur strains and sprains than females. In this report, there were no serious injuries, such as spinal cord injuries. We herein report a case of spinal cord injury induced by “Ultimate” sports.

CASE REPORTS

A 20-year-old female ran after the disc, turned around and jumped to try to catch the disc at a national “Ultimate” sports athletic competition. When she fell, the back of her neck made direct contact with the ground. Immediately after this impact, she showed tetraplegia with dysesthesia at every extremity. An air ambulance with a physician was called. When the physician checked her, she had tetra paresis (manual muscle test scale (MMT); grade 2-3 at every extremity)

and dysesthesia at every extremity. She was transported to our hospital within 20 minutes. Her past history included a cervical disc hernia she had sustained playing basketball when she was in junior high school and high school. Her family history was not remarkable.

On arrival at our hospital, her vital signs were as follows: she remained in clear consciousness; her blood pressure was 110/70 mmHg; pulse rate, regular at 96 beats per minute and the saturation of peripheral oxygen on oxygen at 10 L/minute, 100%. Her tetra paresis improved from 2-3 of the MMT to 4, and she had dysesthesia in bilateral hands. A blood examination demonstrated no specific findings. Whole body computed tomography revealed no traumatic lesions in either the intracranium or cervical bone (Figure 1). Urgent spinal magnetic resonance imaging disclosed degenerative changes and mild protrusion of the discs at C5/6 and C6/7 (Figure 2). However, there were no significant lesions at the spinal cord lesion and no compression of the spinal cord by the disc hernia. She was put on complete bed rest with a cervical collar. On the 2nd hospital day, 14 hours after the accident, her motor weakness completely subsided and she felt only mild grade dysesthesia at both hands. She could stand and walk as usual, so she was diagnosed to have suffered a spinal cord concussion. She was discharged on foot that day and returned home.



Fig-1: The cervical CT on arrival

The CT showed no fractures or dislocation. It was to Spinal Cord Injury without Radiological Abnormality (SCIWORA).

The MRI showed degenerative changes and mild protrusion of the discs at C5/6 and C6/7.

However, there were no significant lesions at the spinal cord and no compression of the spinal cord by the disc hernia (left:T1-weighted image, middle:T2-weighted image, right: T2-weighted short-tau inversion recovery)

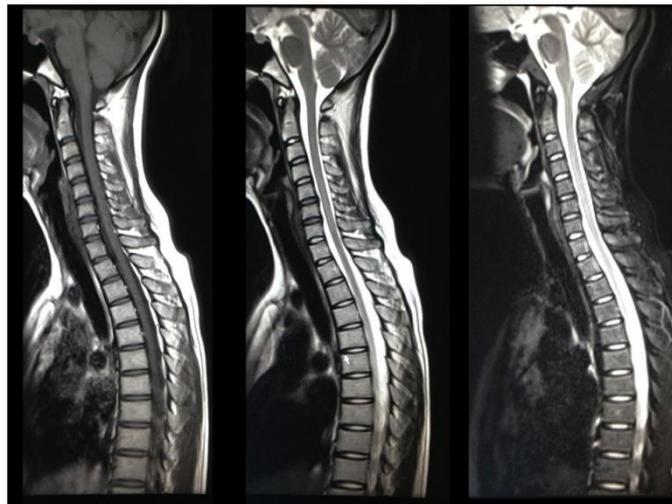


Fig-2: The cervical MRI on arrival

DISCUSSION

This is the first case report of a spinal cord concussion induced by “Ultimate” sports. A spinal cord concussion is an injury that causes transient paralysis and/or sensory disturbance, subsiding within two or three days [2, 3]. There was controversy whether pre-existing abnormalities of the spine, such as spinal canal stenosis, are risk factors for the occurrence of a spinal cord concussion [4]. The present case did not have spinal canal stenosis, but the other characteristics were similar to the previous reports [2-4]. In cases without spinal canal stenosis, the hypotheses about the mechanism of spinal cord concussion included: a functional block of the neural activity by the impact or

transient neurological deficits due to transient hypo perfusion of the spinal artery [4]. As there is limited contact in “Ultimate” sports, it has been thought to be easy and safe to play, and has become popular among young people. However, depending on the position of the body when a player drops to the ground after jumping to try to catch the disc, it may result in occurrence of severe neurological trauma.

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