PIONEER
ACADEMIC PUBLISHING LIMITED

Current Research in Medical Sciences
ISSN 2958-0390
www.pioneerpublisher.com/crms
Volume 3 Number 1 March 2024

Cervical Disc Hernia Following a Jet-Ski Accident

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doi:10.56397/CRMS.2024.03.08

Abstract

Authors report the case of an adult man showing cervical spine involvement with radicular pain of acute onset. The happening followed a Jet Ski use for recreational purposes, and the patient did not had any training before the event. MRI of the cervical spine showed a massive disc involvement at the C6-7 level, and a conservative treatment with supportive collar was warranted. Particular attention should be made with the advent of personal watercraft (PWC) engines and devices in our area, unknown before both to users or clients as well as to medical staff. PWC might show a wide range of bodily injuries, some of them even lethal, therefore guidelines and precautions might be needed extensively in the next future.

Keywords: Jet Ski, watercraft recreational water sports, disc hernia, cervical spine

1. Introduction

Water sports are nowadays very fun for youth and a very popular form of recreational activities, however they seem to be risky and causing damages from mild and severe to life threatening ones. As people are continuously finding new ways to explore the outdoors, the interest on using personal watercrafts (PWC), also known as Jet Ski, in the open sea has been increased. The concept of PWC was first launched in the 1960s and during the upcoming years due to the big technology improvement, it was made possible to have PWCs that can accommodate from one to three people and with a speed up to 128 km per hour (Donnally CJ, Rothenberg PM, Metser G, Massel DH, Butler AJ, Damodar D, Shin SH & Zakrison TL., 2018; NMMA (Ed.), 2014). In the USA, it is reported that 24% of all marine injuries are caused by PWCs (Nolan JP, Soar J, Zideman DA, Biarent D, Bossaert LL, Deakin C, Koster RW, Wyllie J, Böttiger B & ERC Guidelines Writing Group, 2010).

2. Case Report

We report a case of a 41 years old male who presented in outpatients' clinic with tingling sensation of the right arm down to the index and middle finger, pain that started from his neck and was irradiating to his right shoulder, posterolateral board or arm and forearm and weakness. He referred that one week ago he had been on vacation with his friends and while he was jet skiing on the wavy sea with a considerable speed and while trying to turn fast to the left to avoid a wave, he had a feeling of pins and needles in his right index and middle

finger. He didn't have any other complaint and wasn't concerned until five days after, when pain, numbness and arm weakness started to occur.

Upon neurological examination, a radicular syndrome was noticed. The weakness of the right upper limb was evident with inability to flex the index and middle finger. Past medical history did not find any diseases or any previous admission to hospital. He was a smoker (20 cigarettes per day) and had a sedentary life working in his office most of the day.

He underwent a cervical MRI, which revealed: right posterolateral herniated disc at C6-7 level with medullar compression **[Figure 1, composed]**. The patient was immediately referred to a neurosurgeon and a decompressive intervention was suggested, but was refused. In these circumstances, symptomatic treatment was recommended with both non-steroidal and steroidal anti-inflammatory drugs and a cervical collar.

Figure 1. Left and middle inset: sagittal MRI images of cervical spine showing a disc hernia at the C6-7 level; **Right inset**: axial image of the cervical MRI spine at the above level.

3. Discussion

A spinal herniated disc (HD) is a condition in which nucleus pulpous protrudes through the annulus fibrosis, and is named after the affected part of the spine. A cervical HD, by putting pressure on the cervical spinal nerve, can cause pain, tingling, numbness, shoulder or arm, and in case of large herniation, cervical spine compression can occur, resulting in myelopathy and causing weakness of arms and in more severe cases, quadriplegia. Causes of HD are disc degeneration because of aging, non-correct posture, sedentary life, trauma etc. (De Cicco FL & Camino Willhuber GO., 2023; Dydyk AM, Ngnitewe Massa R & Mesfin FB. Disc Herniation, 2023).

Spinal cord injuries are most common related to high-energy mechanisms, which are involved with numerous coastal water activities including Jet Ski (Kane I, Ong A, Radcliff KE, Austin LS, Maltenfort M & Tjoumakaris F., 2015). Accidents on watercrafts often have much in common with motorcycles and motor vehicles such as rapid deceleration, ejection, and collision (Ehrhardt JD Jr, Newsome K, Das S, McKenney M & Elkbuli A., 2022). However, the suggested mechanism of cervical spine injury while jet skiing without falling, is the hyperextension of the neck and studies have shown that typically, this happens in inexperienced people who are not physically fit and used with exercise and sport or due to lack of experience in jet skiing techniques (Jung HC, Straltsova H, Woodgate MA, Kim KM, Lee JM, Lee JH & Gann JJ., 2021; Chang SK, Tominaga GT, Wong JH, Weldon EJ, Kaan KT., 2006).

Besides, tourists are more exposed than locals, and this comes because of lack of awareness about the sea or environmental specifics of the unknown place to them. Other contributing factors that seem to be influencing the numbers of spinal injuries by PWCs are: alcohol and drugs consumption, misjudgment of water depth, irresponsible and careless behavior, excessive speed and it is reported that men at their twenties and thirties are the most affected (Chang SK, Tominaga GT, Wong JH, Weldon EJ & Kaan KT., 2006; Hayes KC, Askes HK & Kakulas BA., 2002; Latch R & Fiser DH., 2004).

Even though sea sports are often considered safe

and not as extreme as whitewater sports such as Rafting, Kayaking and Canoeing, they still expose people to hazards that may end up in devastating situations (Spittler, Jack MD; Gillum, Ryan MD; DeSanto & Kristen MSLS, 2020; Xhemali B, Vyshka G, Sinamati A & Shaqiri E., 2017). Regarding this fact and with the increase of prevalence of PWC use and injuries, it is a necessity for prevention strategies to be made. Several authors propose changes in policy and legislation, as well as manufacturing standards for PWCs including also the protective clothing (White MW & Cheatham ML., 1999).

Another point of view for governments is setting strict license requirements so that only capable trained persons can have PWCs (Swinburn EE., 1996). It is also recommended to raise the age limit for PWC use and to strictly monitor the speed limit. Furthermore, it is suggested not to use PWCs during bad weather conditions and moderate or severe shore break (grade 3 and 4 according to Beach Grading System) (Chang SK, Tominaga GT, Wong JH, Weldon EJ & Kaan KT, 2006).

It is also important to increase surveillance and install proper guards, also to carefully sign all the beaches with the limitations, required criteria and danger alert in order to raise awareness in visitors (Ehrhardt JD Jr, Newsome K, Das S, McKenney M & Elkbuli A., 2022). In addition, correct medical staff recognition of injuries by PWCs and good educational training for them can improve outcome (Branche CM, Conn JM & Annest JL., 1997).

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