Defense and Veterans Brain Injury Center "Clinical Updates in Brain Injury Science Today [CUBIST]" Podcast
"Change in headache suffering and predictors of headache following mild traumatic brain injury. A population based, Controlled, longitudinal study with 12 months follow-up"
TRT: 10:02_min
Host: Dr. Don Marion, MD

Defense and Veterans Brain Injury Center "Clinical Updates in Brain Injury Science Today [CUBIST]" Podcast

Episode 207: Change in headache suffering and predictors following mTBI

[music]

Don Marion: The views, opinions, and findings contained in this podcast are those of the host and subject matter experts. They should not be construed as official Department of Defense positions, policies, or decisions unless designated by other official documentation.

[music]

Marion: Hi. Welcome to Clinical Updates in Brain Injury Science Today, or "CUBIST," a podcast for health care providers about current research on traumatic brain injury, also known as TBI. This program is produced by the Defense and Veterans Brain Injury Center, otherwise known as DVBIC. I'm your host today, Don Marion. I am a neurosurgeon in the Research section here at DVBIC.

In today's episode, I'll be talking with Ms. Betsy Myhre. Ms. Myhre is a nurse practitioner and senior clinical consultant at DVBIC. Betsy and I will discuss a study titled,
"Change in headache suffering and predictors of headache following mild traumatic brain injury. A population based, Co ntrolled, longitudinal study with 12 months follow-up". This article was recently published in the Journal of Neurotrauma by Lena H. Nordhau and colleagues from the Norwegian University of Science and Technology.

Marion: Morning Betsy, how are you?

Myhre: Good morning, Don. I'm great, thanks. How are you?

Marion: Good. This is a really interesting study and I wonder what made you chose it this month?

Myhre: I think this is a great article for us to talk about because DVBIC has just released a new interactive provider training on headaches called "Management of Headache Following Concussion/Mild Traumatic Brain Injury". Since the purpose of this article is to explore whether patients with mild traumatic brain injury, or mTBI, are at risk for headaches following their injury, I thought it tied nicely to the launch of the training program.

Marion: OK. So, what did they find?

Myhre: This was a population-based, controlled, longitudinal study of 378 patients who had a mild TBI within 48 hours of enrollment compared to a control sample of 82 patients with minor orthopedic injuries, and 83 uninjured subjects, all residents of Trondheim, Norway.

Marion: That sounds like a pretty big study.

Myhre: It was. Additionally, there was a homogenous cohort, ages 16-60 years, or a mean age of 31 years, and the study was conducted from 2014-2015. Based on self-report questionnaires completed at baseline and again at three and 12-months after the injury, the mTBI patients were 3.6-4.3 times more likely than the control groups to have headaches (HA) at three months after injury.

Marion: So is the mTBI is that the same as concussion, Betsy?

Myhre: Yes. A mild traumatic brain injury is the same as concussion.

Marion: Ok.

Myhre: At 12 months after injury there was no difference in the incidence of headaches between the three groups. Predictors of headache in the mTBI group included female sex (which we've seen in other studies), and pathological findings of CT or MRI. A history of previous MTBI or being injured under the influence of alcohol were significant positive predictors for persistent headache in all three groups. However, 44% of the patients with an MTBI were under the influence of alcohol at time of injury. Additionally, falls attributed to 36% of the MTBIs.

Marion: Is that unusual, Betsy? For this age group?

Myhre: It does seem high, doesn't it? For this age group? Ironically, in the trauma group, only 7% reported an alcohol influence at the time of injury and the researchers noted that the majority of patients in the trauma group were sports related injuries. So perhaps that was a more healthy cohort.

Marion: Yeah, I mean, that's kind of what you might have expected for that age group is sport related trauma, right?

Myhre: Correct.

Marion: So, Betsy, how did the researchers define headache and account for the fact that many people have headaches regardless of traumatic brain injury?

Myhre: That's a great question. The researchers defined headache according to the international classification of headache disorders and specifically focused on "headache attributed to traumatic injury to the head (HAIH) which is defined as a headache with no defining clinical characteristics that starts within seven days of injury". An acute HAIH is defined as lasting less than three months, and a persistent HAIH lasts more than three months. Since 37% of the general population in Norway reported a headache in the previous year it was important to consider the incidence of headache in mTBI patients compared with the incidence in the two control groups. The trauma group was matched to the MTBI group with regard to age and sex and the community control was matched with regard to age, sex, and education.

Marion: Betsy, what were the inclusion and exclusion criteria that they used in this study?

Myhre: The inclusion criteria for the mTBI group were having experienced an mTBI within 48 hours of enrollment in the study. And then to answer your question about concussion and mTBI, TBI was categorized as mild according to the World Health Organization criteria: Glasgow Coma Scale (GCS) score 13-15 at presentation, and either witnessed loss of consciousness (LOC) <30 minutes, confusion or posttraumatic amnesia <24 hours. Inclusion criteria for trauma controls were fractures or symptoms from soft tissue injuries lasting ≥48 hours. Exclusion criteria were severe head or neck injury (including whiplash injury), multi-trauma, presence of co-morbidities or circumstances that would make it difficult to follow-up patients, late presentation, non-residency in Norway or non-fluency in Norwegian language, severe psychiatric disease or a history of drug abuse.

Marion: We talked about the unusual nature in the cause of injury being falls in a relative young group rather than sports related injuries, which you would normally think of and relatively high incidence of alcohol use in the mTBI patients or people in this study. What are some of the other limitations of the study?

Myhre: Although there were a number of strengths with this study, you pointed out one of the biggest limitations that I saw, this high incidence of alcohol use in the mTBI patients. Pre-injury headache recall may be limited, meaning that there may not be as great a correlation between the mTBI patients and having a headache.

Marion: Especially with the history of high alcohol use.

Myhre: Exactly. But even for the general population, to think back and look in the past year have you had a headache and how often does the general person have a headache, needs to be factored into this. Individuals who suffer from headaches could have been more likely to complete the questionnaires than those without headaches leading to exaggerated increase in the headache suffering. So, what they would call "Recall bias." Generalization of the findings of their study in Norway, to societies of mixed race and ethnicity may also be a limitation to this study. Since this study was conducted among residents of a very small, very homogenous community in eastern Norway.

Marion: Finally Betsy, what are the key findings? What should providers take away from this study?

Myhre: Providers should takeaway that although a considerable proportion of patients with an mTBI will experience headache (either a new or exacerbation of previous headaches) during the first few weeks or even first couple of months after the injury, most patients have resolution of post-traumatic headaches during that period of three-12 months after the injury. So I think anticipatory guidance for your patient to say "Ok, you may experience headaches immediately following the concussion, but eventually those headaches are going to go away." This study supports that. Also, a history of previous MTBIs and excessive alcohol use are associated with an increased risk of acute post-traumatic headaches, and maybe a positive predictor of persistent headache, so screening your patients for those two previous mTBIs and excessive alcohol use would be something that providers can put into their clinical practice.

Marion: Thank you so much Betsy for your insights. That's all we have time for today. We hope you enjoyed this quick literature update and you can find the DVBIC Interactive Provider Training on "Management of Headache Following Concussion/Mild Traumatic Brain Injury" at the DVBIC website. This training provides 1 hour of continuing medical education units.

You can stay up-to-date on future episodes of CUBIST by subscribing on iTunes, Stitcher, SoundCloud, or wherever you listen to podcasts, where you can also find links to the articles we discussed today and other relevant resources.

[music]

"CUBIST" is produced and edited by Vincent White and was hosted today by me, Don Marion. It is a product of the Defense and Veterans Brain Injury Center, led by Division Chief Captain Scott Pyne, Medical Corps, United States Navy.

Thank you so much for listening to this episode. Next time, we will discuss TBI research getting attention in the mainstream press.

[music]