

Association of Position Played and Career Duration and Chronic Traumatic Encephalopathy at Autopsy in Elite Football and Hockey Players

Nicole Schwab, MSc, Richard Wennberg, MD, PhD, Karl Grenier, MD, PhD, et al.

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Correspondence

Dr. Hazrati

lili-naz.hazrati@sickkids.ca

Study Question

Is there an association between career duration or position played with chronic traumatic encephalopathy (CTE) at autopsy among elite football and hockey players?

What Is Known and What This Paper Adds

The risk of a concussion for football and hockey players depends on the position they play. This investigation of 35 former players of both sports did not find an association between career duration or position played and CTE at autopsy.

Methods

For this retrospective cohort study, the investigators analyzed the brains of 24 former American football and 11 hockey players (all male; 29 had been professional and 6 had been university varsity or Canadian major junior players). CTE was diagnosed at autopsy based on the presence of phosphorylated tau aggregates in neurons, astrocytes, and cell processes around small vessels in the depths of cortical sulci. Online databases were used to collect data concerning player positions at the highest levels; ages at retirement from competition, which served as a proxy measure of career durations; and, for hockey players, histories of fighting and penalization. The primary outcome was the association of career history variables and the postmortem diagnosis of CTE.

Table Comparisons of Players With and Without CTE in Terms of Selected Player History Variables

Play history variable	Mean value for players	
	With CTE	Without CTE
No. of seasons at highest level	8.9 ± 3.6	8.0 ± 3.7
Age at retirement	31.1 ± 5.1 y	29.9 ± 4.2 y
Fights per season for hockey players	7.2 ± 6.6	8.0 ± 7.3

Results and Study Limitations

In total, 17 players (49%) had evidence of CTE at autopsy. Statistical analyses revealed no associations with CTE for age at retirement, position played in either football or hockey, nor fighting/penalization histories for the hockey players. A limitation of the present study is its small sample, which might have resulted in false negatives. Another limitation is heterogeneity among the hockey players in terms of history of helmet use. Furthermore, all players in the sample had experienced neurologic symptoms.

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