Fitness-to-drive after mild traumatic brain injury: Mapping the time trajectory of recovery in the acute stages post injury

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Abstract

Mild traumatic brain injuries (mTBI) comprise 70–90% of all traumatic brain injuries sustained, often as a result of motor-vehicle crashes. Despite this, there is little evidence to suggest when individuals are safe to return to driving. In this study, two groups of participants were recruited: patients with mTBI and a control group. Both groups were assessed 24 hours post injury on fitness-to-drive assessments. Two weeks post injury, follow-up occurred to establish driver status. This research confirmed that patients with mTBI should not drive for 24 hours. Further research is required to map factors which predict timely return to driving.

Knowledge Gap

Individuals who sustain a mild traumatic brain injury (mTBI) are commonly treated in an acute hospital, and this is the setting where fitness-to-drive recommendations are made. However, national medical guidelines in Australia reflect that little is known about the recovery trajectory in fitness-to-drive post injury (Austroads, 2012). This means health-care professionals have limited evidence on which to base recommendations about return to driving for the mTBI cohort.

Purpose

To determine fitness-to-drive status of patients with a mTBI at 24 hours and 2 weeks post injury, and to summarise issues reported by the mTBI cohort about return to driving.

Method

Case-control design. Two groups of participants were recruited from an acute hospital in Victoria, Australia: patients with a mTBI (n = 60) and a control group with orthopaedic injuries (n = 60). Both groups were assessed at 24 hours post injury on the OT-DORA Battery (Unsworth et al., 2011) – a fitness-to-drive assessment. Follow-up occurred at 2 weeks post injury to establish driver status, and to determine time to return to driving.

Results

At 24 hours, only one sub-test of the OT-DORA Battery showed a difference in scores between the two groups, with mTBI participants being significantly slower ($p = 0.01$) to complete the maze sub-test. At the 2 week follow-up, only 26 of the 60 mTBI participants had returned to driving. Injury severity combined with scores from the 24 hour assessment predicted 31% of the variance in time taken to return to driving. Delayed return to driving was reported due to: “not feeling 100% right” (n = 14, 42%), headaches/pain (n = 12, 36%), and dizziness (n = 5, 15%).

Conclusion

Results demonstrate the complex issue of predicting fitness-to-drive. At 24 hours post injury, patients with a mTBI displayed difficulties on only 1 of 5 assessments thought to represent various aspects of fitness-to-drive, yet only one-third of participants went on to return to driving 2 weeks post injury. Existing guidelines which suggest that patients with a mTBI should not drive for at

least 24 hours are supported by this study; however, further research is required to map factors which predict return to driving.

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This is the first time that patients with a mTBI have been assessed in an acute hospital and followed-up within the expected recovery trajectory. While it might be assumed that drivers return to this activity quickly post mTBI, this study has indicated that a significant proportion of patients do not, and the reason for this delay cannot be explained by factors easily measured. The results of this study support health-care professionals to advise patients not to drive for 24 hours post injury and has better positioned these professionals to provide education to the mTBI cohort about issues they may face in return to driving.

References

Austroads. (2012). *Assessing fitness to drive: For commercial and private vehicle drivers*. Sydney: Austroads.

Unsworth, C.A., Pallant, J.P., Russell, K.J., & Odell, M. (2011). *OT–DORA Battery: Occupational Therapy Driver Off-Road Assessment Battery*. Bethesda, MD, AOTA Press.