Do Toxic Synergies of Underlying Etiologies Predispose the Positive Association Between Traumatic Brain Injury and ADHD?

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Abstract

Objective:
In their meta-analysis, Adeyemo et al. reported a strong association between mild traumatic brain injury (mTBI) and ADHD. However, less is understood about why such an association exists.

Method:
This commentary focuses on the underlying etiologies of both conditions to reveal potential toxic synergisms that could explain this association.

Results:
Alcohol and substance abuse are recognized comorbidities in both conditions. The author of this commentary has recently been the first to propose that chronic exposure to nitrous oxide (N2O), an increasing environmental air pollutant and greenhouse gas, may contribute to the cognitive impairment seen in conditions such as ADHD and autism. The toxic synergisms from combined GABA-mimetics, such as ethanol, and nontoxic N2O exposure have been previously elucidated and are further contextualized here.

Conclusion:
The conclusion of this commentary is that the toxicological interdependence of the underlying etiologies for mTBI and ADHD may help to explain their association as found in the meta-analysis conducted by Adeyemo et al. This commentary explores this dynamic further and, in so doing, underscores the need for additional research to validate these important conclusions.