




An update on survival after anoxic brain injury in adolescents and young adults

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ABSTRACT

While much is known about long-term survival after traumatic brain injury, less is known about survival after anoxic/hypoxic brain injury. We previously compared the two and found no significant difference (hazard ratio [HR] 0.97, $p=0.92$) after controlling for age, sex, and severity of disability. The present study updates this, based on 1,802 patients with TBI and 380 with anoxic, aged 15 to 25, evaluated in 1986 or later, and who survived one year post injury. The anoxic group had higher mortality (HR = 1.13), though again the difference was not statistically significant ($p=0.58$).

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We previously compared the long-term survival of 1,620 patients aged 15 to 35 who suffered traumatic brain injury (TBI) with that of 237 comparable patients who had anoxic or hypoxic brain injury (hereafter, anoxic) (1). The analyses were based on Cox Proportional Hazards regression models that controlled for age, sex, and the severity of resulting disability. We found that survival was not significantly different between the groups (hazard ratio [HR] for anoxic to TBI of 0.97, with 95% confidence interval 0.57–1.65, $p = 0.92$). In the present short communication we update this using a larger patient population and longer follow-up.

Data were from the State of California, Department of Developmental Services. Details are given in the prior study. Briefly, all children and adults in the state with developmental disabilities are eligible for services and receive a comprehensive annual evaluation. We selected only persons aged 15 to 25, evaluated in 1986 or later, and who survived at least 1 year post anoxic or TBI.

There were 1,802 patients with TBI and 380 with anoxic, of whom 134 and 25 died, respectively, over the 1986 to 2015 follow-up period. Controlling again only for age and sex, we found a HR of 1.23 for anoxic compared with TBI (95% CI 0.80–1.88, $p = 0.35$), indicating 23% higher mortality in the former group, though this was not close to being statistically significant. As previously, we found that the group with anoxic were more severely disabled, on average, than those with TBI.

After controlling additionally for severity, as is necessary, and using the same groups as previously, the HR attenuated to 1.13 (95% CI 0.74–1.74, $p = 0.58$), suggesting only 13% higher mortality in the anoxic group. As in the previous study, there was not sufficient evidence to suggest that the result varied by age, sex, or severity of disability (test for interactions, $p > 0.20$ in all cases).

Overall, the two studies suggest that prognosis for survival after anoxic brain injury is similar to that after TBI, though the sample sizes are not sufficient to reject the possibility of a modest difference. Further research is necessary to confirm this finding, and to determine if the effect, if any, varies by age, sex, or severity.

Disclosure statement

The authors report no declarations of interest.

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