

Midbrain Injury is Common in Patients with Abnormal Pupillary Light Reflex After Cardiac Arrest

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Introduction

Up to 65% of patients monitored with pupillometry during therapeutic temperature management (TTM) after cardiac arrest will have sluggish (SL) or non-reactive (NR) pupils. The neuroimaging findings and injury patterns of these patients have not been reported.

Methods

115 adult patients treated with TTM after cardiac arrest with available pupillometry data from the NeurOptics NPi-200 were studied. Discharge outcome was classified as poor (PO) if the Cerebral Performance Category score was 3-5, and as good if 1-2. Pupil size, percent constriction, and constriction velocity were determined throughout TTM using data from the worst eye at each assessment. The Neurological Pupil index (NPI) was scored from 0 (NR) to 5 (brisk), with values

Results

Poor outcomes occurred in 34/35 (97%) patients with NR pupils during TTM, 22/34 (65%) patients with SL pupils, and 25/46 (54%) with normal (NL) pupil reactivity. Pupil size did not predict outcome, but pupillometry data during TTM predicted poor outcome with AUC 0.73-0.78. When nonreactive pupils were first detected, 24/35 (68%) were

Conclusions

A minority of patients with sluggish or non-reactive pupils after cardiac arrest have evidence of cerebral edema or herniation. Midbrain injury is a more common mechanism to explain this common neurologic deficit.