Poster 085

Clinical usefulness of quantitative assessment of pupillary light reflex in hospital onset unresponsiveness

Soh Hyun Choi, Hyunjo Lee, Bobin Park, Hanbin Lee, Jun Young Chang, Yoon-Hee Hong, Sang-Beom Jeon
Asan University Medical Center- Seoul, S Korea

Introduction

Hospital-onset unresponsiveness (HOU) may occur in patients hospitalized for non-neurological conditions; while HOU tends to be a transient systemic event, it may also indicate underlying neurological problems. Quantitative pupillometry provides NPi (neurological pupillary index), a quantitative measurement of pupillary light reflexes that have been traditionally assessed via subjective visual impression. We determined the clinical usefulness of NPi in predicting the outcomes of patients who have experienced HOU.

Methods

HOU was defined as a newly developed altered mental status and cases coded as “unresponsive” in the ACDU (alert, confused, drowsy, and unresponsive) scale. We analyzed the demographics, radiological findings, etiology of HOU, NPi, in-hospital mortality, and 3-month modified Rankin Scale (mRS) scores.

Results

A total of 345 cases in 331 patients were analyzed, out of which 214 cases (62%) had been assessed with quantitative pupillometry. Cerebral herniation syndrome (CHS) was found in 52 (15%) cases; higher NPi was associated with decreased risk for CHS (odds ratio, 0.61; 95% confidence interval [CI], 0.26–0.77; p=0.003), and no other factors were associated with the risk of CHS. A total of 102 (30%) cases showed in-hospital mortality. After controlling for clinical covariates and the presence of CHS, lower NPi was independently associated with increased risk for in-hospital mortality (odds ratio, 0.52; 95% CI, 0.29–0.94; p=0.02). At a cutoff value of 1.8, the specificity and sensitivity of NPi for predicting in-hospital mortality were 92% and 50%, respectively. Multivariate analysis showed an independent association between lower NPi and unfavorable clinical outcomes (common odds ratio, 0.64; 95% CI, 0.51–0.80; p=0.02).

Conclusions

NPi, a quantitative index of pupillary light reflex, was significantly associated with the risk of cerebral herniation and in-hospital mortality in non-neurological patients with HOU. Measuring pupillary light reflexes through quantitative pupillometry may be useful when responding to HOU cases.