

EQUIVALENCE EVALUATION BETWEEN PUPILLOMETRY INDICES NP_i AND QP_i VS SUBJECTIVE PUPILLOMETRY IN PATIENTS WITH ACUTE BRAIN INJURY

C. Serrano Gonzalez | M. Gonzalo Briceño | M. Velasco Roncero | N. Broncano Gonzalez | S. Hermida Gomez | R. De Pablo | M. Lopez Olivencia | A. Blandino Ortiz

Abstract ID: 301

Type of communication: Research project (with results) – Poster presentation

Topic: Technology/instrumentation in critical care

Objectives/Introduction

Introduction: We describe pupillary reactivity using pupillometric indices: NP_i/QP_i, combining different reflex parameters. Compared with subjective pupillometry, these indices can predict intracranial hypertension or neurological outcomes, based on statistical classification of the photomotor reflex amplitude.

Objective: To explore whether QP_i is equivalent to NP_i in acute brain injury and whether subjective assessment matches these indices.

Methodology

We conducted a pilot, observational, prospective study in ICU patients with acute brain injury, who were comatose or sedated.

Pupil measurements were performed using NP_i-200 and Neurolight devices. Conventional pupillometry included assessments of isocoria/anisocoria and reactivity.

Results were analyzed using IBM SPSS Statistics. We calculated agreement for categorical/dichotomous variables, using unweighted Cohen's kappa for dichotomous outcomes and weighted kappa for ordinal variables. Interpretation followed Landis-Koch classification. We also assessed agreement between quantitative and subjective assessments.

Values were interpreted as follows: 0.01–0.20 = slight agreement; 0.21–0.40 = fair agreement; 0.41–0.60 = moderate agreement; 0.61–0.80 = substantial agreement; and 0.81–1.00 = almost perfect agreement.

Strong correlation was found between NP_i and QP_i, and substantial agreement of photomotor reflex parameters (Var and CH), which are considered most reliable for neurological prognosis. Both devices showed strong correlation with subjective assessments.

Results

From Dec 2022 to Mar 2023, 53 patients were included: 43% ICH, 32% SAH, 15% post-cardiac arrest, 10% TBI. 86 measurements were collected. 60% were male, average age 61±13, median GCS score 7. 21 ICP determinations: mean ICP = 10 mmHg. Strong correlation was found between QP_i and NP_i ($k = 0.83$; $p < 0.001$), with substantial agreement in photomotor reflex variables (Var-CH). Using different pupillometric cutoffs for reactivity, near-perfect agreement was observed ($k = 0.81$; $p < 0.001$), also aligning with conventional assessments.

Event information

Event: SEEIUC 2024

Topic: Technology/instrumentation in critical care

Information from author

Author 1: Cristina Serrano Gonzalez

Email: cristinaserrano633@gmail.com

Affiliation: Hospital Universitario Ramón y Cajal

Information from co-author

Author 2: Mercedes Gonzalo Briceño

Email: mercedes.gonzalo@hotmail.com

Affiliation: Hospital Universitario Ramón y Cajal

Author 3: Marina Velasco Roncero

Email: marina.velasco@gmail.com

Affiliation: Hospital Universitario Puerta de Hierro

Author 4: Noemí Broncano Gonzalez

Email: nobronco@hotmail.com

Affiliation: Hospital Universitario Ramón y Cajal