▪ Headache Medicine 2026, Supplement ▪ p-ISSN 2178-7468, e-ISSN 2763-6178

Headache Medicine

ID: 125

Optic nerve sheath diameter correlates with intracranial hypertension markers in patients with idiopathic intracranial hypertension

João Roberto Ribeiro Pimenta, Maria Fernanda Hamamoto Leati, Raphael Palomo Barreira, Annelise Akemi Higa Lee, Luisa Alres Domingues, Marina Trombin Marques, Danyelle Sadalla, Renan Barros Domingues

Santa Casa de Misericórdia of São Paulo, São Paulo, São Paulo, Brazil

Renan Barros Domingues
contato@renandomingues.med.br

Introduction
Idiopathic intracranial hypertension (IIH) is characterized by elevated intracranial pressure and may lead to visual impairment and papilledema. Measurement of optic nerve sheath diameter (ONSD) has emerged as a noninvasive method for estimating intracranial pressure, but its clinical utility in IIH populations remains under investigation.

Objective
To evaluate the association between ONSD measurements and markers of intracranial hypertension in patients with IIH.

Methods
We performed a retrospective observational study including patients diagnosed with IIH who underwent ONSD evaluation. Demographic, anthropometric, therapeutic, ophthalmologic, and cerebrospinal fluid opening pressure data were collected from medical records. ONSD values ≥5.5 mm were considered abnormal. Analyses included only ophthalmologic and manometric evaluations performed within 3 months of ONSD measurement. Associations between ONSD, cerebrospinal fluid opening pressure, visual acuity reduction, and papilledema were analyzed using contingency tables, correlation analyses, logistic regression, and ROC curve analysis.

Results
Twenty-five patients and 37 bilateral ONSD measurements were included. Mean age was 38.3 years, mean body weight was 91.1 kg, and mean BMI was 35.5 kg/m². Mean opening pressure showed a positive correlation with ONSD measurements (Spearman rho=0.25), although without statistical significance (p=0.36). ONSD enlargement was significantly associated with papilledema (Fisher's exact test p=0.025). ROC analysis demonstrated moderate discriminatory performance of ONSD for papilledema detection, with an area under the curve (AUC) of 0.70. Patients with severe obesity (BMI ≥40 kg/m²) exhibited higher mean ONSD values than patients with BMI <40 kg/m² (6.01 mm vs 5.66 mm).

Conclusion
In this IIH cohort, ONSD measurement demonstrated significant association with papilledema and moderate ability to discriminate active intracranial hypertension-related optic disc changes. These findings support the usefulness of ONSD as a noninvasive marker of intracranial hypertension in patients with IIH.

Keywords:
Idiopathic intracranial hypertension
Optic nerve sheath ultrasound
Papilledema

© Copyright 2025