



Clinical Aspects of Patients with Cerebral Compliance Disturbances

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Introduction

Headaches are classified as primary or secondary, based on the presence or absence of an underlying cause. Little is known about secondary headaches due to homeostasis disorders, which may be linked to changes in intracranial compliance involved in cerebral blood dynamics.

Objective

The study aims to explore the relationship between changes in compliance and chronic secondary headaches and to propose clinical patterns of these headaches using a non-invasive device called Brain4Care (B4C).

Methods

Patients with daily and chronic secondary headaches without previous etiology from the headache ambulatory care at Complexo Hospital de Clínicas - Universidade Federal do Paraná underwent B4C exams to assess cerebral compliance and hemodynamic tilt-test to evaluate neurovascular components. Questionnaires on allodynia (ASC-12), clinical characteristics of the headache, and autonomic manifestations (COMPASS-31) were applied. Patients were classified as having normal or altered B4C according to exam parameters such as P2/P1 ratio and time to peak (TTP). A flowchart was developed to group patients with similar characteristics.

Results

Twelve patients were included with a mean age of 45.2 years (67% female). Common clinical characteristics included age over 50 years, frontal and occipital pain (75%), bilateral lateral pattern, pulsatile (67%), and expansive pain (62.5%), unrelated to allodynia or autonomic manifestations. There was a significant age difference between the normal group (26.8) and the altered B4C group (54.5) ($p=0.048$). Both P2/P1 ratio (1.31) and TTP (0.27) averages in supine position were higher in the altered group compared to the normal ($p=0.004$). Peripheral vasodilation and reduced stroke volume were suggested as possible pathophysiological mechanisms.

Conclusion

This exploratory study is the first to correlate altered cerebral compliance with clinical patterns in patients with daily and secondary chronic headaches. The study found that patients with chronic secondary headaches of unknown etiology may present changes in cerebral compliance. These findings highlight the importance of evaluating cerebral compliance in managing these patients and pave the way for future investigations into this new entity, termed secondary headache due to altered cerebral compliance.