Dear Editor,

We read with interest the article by Serdarevic (1) regarding the disorders of accommodative-convergence/accommodation (AC/A) relation in patients with traumatic brain injury (TBI). Similar to the results of previous studies, the author found that the individuals with TBI may have various degrees of convergence insufficiency (CI) (2, 3).

Traumatic brain injury (TBI) is defined as an alteration in brain function, or other evidence of brain pathology, caused by an external force. It can affect multiple aspects of vision, where mild TBI frequently leads to different disruptions in visual functioning, while moderate or severe TBI often cause structural lesions (4). There are two basic mechanisms of TBI: blast-related (BR TBI) which is caused by the blast wave itself or by direct head trauma caused by events surrounding the blast and non-blast-related (NBR TBI) which are caused by direct head trauma (5).

The recent reports show that majority of patients with mild TBI can have different visual abnormalities, including oculomotor dysfunction (up to 90%) (2, 3), binocular vision (up to 29%) (2, 3) and visual field deficits (up to 39%) (2). Convergence insufficiency is an eye coordination and alignment problem that can be observed in 43 to 46% patients with mild TBI (2, 3). Moderate and severe TBI might additionally lead to ocular motor palsies, optic neuropathies, and orbital pathologies (4) However, CI without simultaneous visual or vestibular dysfunctions can be observed in only 9% of the visually symptomatic TBI patients (3). The mechanism of TBI injury can also be a prognostic factor, where light sensitivity is reported more often in BR TBI patients (67%) than in NBR TBI patients (33%). However, saccadic dysfunction is measured more often in NBR TBI patients (85%) than in BR TBI patients (58%) (5).

Patients with TBI can suffer from various physical and mental disorders, therefore the treatment of patients with TBI with presenting signs of vision impairment can be extremely complicated. The new concept for treatment of these patients focuses on 4 main problems that need to be addressed: 1. Basic optometric vision examination (includes: assessment of refractive status, binocular status and ocular health status); 2. Oculomotor-based vision problems (refers to more comprehensive investigation and testing related to the specific oculomotor-based vision problems—accommodative vergence and the AC/A ratio, fusional vergence ranges at distance and near, phorias at distance and near, vergence flexibility at near, and the near point of convergence); 3. non-oculomotor-based vision problems (photo sensitivity, motion sensitivity, vestibular problems, visual field defects and various a range of deficits in visual information processing and perception) and 4. non-vision-based problems (refers to depression, fatigue, cognitive impairment, behavioral problems, postural problems, attentional problems and neurological problems). These problems tend to confound and complicate the vision examination procedures and can lead to inadequate treatment and result interpretation (6).

For these reasons, we would kindly ask the authors to perform the correlations for Glasgow Coma Scale (GCS) scores, severity and mechanism of TBI, time between the injury and symptoms onset, refractive status and visual acuity, type of visual field deficits, presence of reading disorders, light sensitivity, presence of non-oculomotor-based vision problems and non-vision-based problems, type and length of visual rehabilitation with AC/C ratio. Without these information's it would be difficult to hypothesize AC/C ratio changes as isolated consequence of CI as a result of TBI. These findings will significantly contribute to the papers scientific value and contribution.

Overall we agree with Serdarević that CI presents important visual deficit in patients with TBI. Other systemic...
and ophthalmic factors such as severity of brain injury, visual acuity and visual field deficits, together with presence of non-oculomotor-based vision problems and non-vision-based problems should be carefully monitored too.

**CONFLICT OF INTEREST: NON DECLARED.**

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