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Hulscher, Jan B.; Vervliet, Broes H. D.; Wilczak, Nadine; van der Naalt, Joukje

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The Diagnostic Value of Brain-Fatty Acid Binding Protein in Traumatic Brain Injury

Jan B. Hulscher,¹ Broes H.D. Vervliet,¹ Nadine Wilczak,² and Joukje van der Naalt³

Dear Editor,

WITH INTEREST we have read the article by Walder and colleagues¹ in which they report the results of the assessment of Heart-Fatty Acid Binding Protein (H-FABP) as a biomarker for patients with severe traumatic brain injury (TBI). H-FABP was increased in patients with multitrauma compared with monotrauma and showed an inverse correlation with outcome as determined by the Glasgow Outcome Scale Extended at 3 months. H-FABP is a non-specific biomarker released in several tissues such as the brain and heart. FABPs are involved in intracellular transport of long-chain fatty acids and are rapidly released from damaged cells into the circulation. Therefore, FABP is increasingly investigated as a marker for injury of different organs. One of the other subtypes of this biomarker, Brain-FABP (B-FABP), is also reported to reflect brain injury in cerebrovascular disease and in mild traumatic brain injury.^{2,3}

We performed a study in which we assessed B-FABP and S100B in 120 patients with various severity of TBI.⁴ All serum samples were obtained early after injury (mean 1.1 [standard deviation (SD)] 0.36 h). CT on admission (classified according to the Marshall criteria) was abnormal in 36% of patients. Median B-FABP was significantly increased in patients with severe TBI compared with those with mild and moderate TBI (40.9 [SD 18.1] vs. 31.8 [SD 15.6 $\mu\text{g/L}$, $p=0.049$). Further, in patients with CT abnormalities, median B-FABP was significantly increased compared with patients without CT abnormalities (41.7 vs. 28.2 $\mu\text{g/L}$, $p=0.04$). S100B was not significantly related to injury severity or CT classification.

Based on these findings, the question arises whether it would be valuable to assess B-FABP in addition to H-FABP. A study in mild TBI revealed a ratio of H-FABP to B-FABP of 0.58, indicating a relatively higher release of B-FABP, although no comparison with imaging was performed.³ Both biomarkers were found to be increased in 70% of patients.

Although H-FABP is 10-fold more present in TBI, it is also increased in ischemic heart disease.⁵ This might be considered an important confounder in severe TBI, because in this category of

patients, often injuries to other systems, in particular thorax and abdomen, are present. Unfortunately, in the study of Walder and associates,¹ biomarkers of cardiac damage were not obtained.

Nevertheless, Walder and coworkers¹ have demonstrated that biomarkers such as H-FABP can be an important adjunct to clinical decision making. We would like to underline the importance of the assessment of FABP, but challenge clinicians to consider the additional value of each specific biomarker in multimarker detection strategies.

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Address correspondence to:
Joukje van der Naalt, MD, PhD
Department of Neurology
University Medical Center Groningen
PO Box 30001
Groningen 9700RB
The Netherlands
E-mail: j.van.der.naalt@umcg.nl

Departments of ¹Surgery, ²Laboratory Medicine, and ³Neurology, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands.