

Exploring future possibilities to improve evaluation and management of Traumatic Brain Injury



Traumatic Brain Injury (TBI) is the most common neurological disorder worldwide, contributing to more death and disability than any other traumatic injury



27 to 69 million annual cases globally^{1,2}



Annual economic burden is estimated to be 400B USD³



Mild TBI (mTBI) accounts for 80% of all TBI cases⁴

Barriers to effective mTBI management

Limitations in current approaches for mTBI evaluation and management:

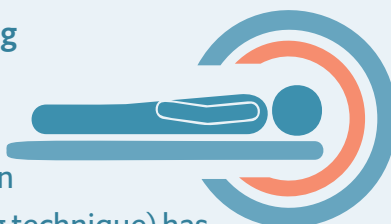
Neuropsychological assessments

Poor access (particularly in remote areas) and lack of standard guidelines affect consistency and results of such tests⁵



Neuroimaging

CT scan (the most common neuroimaging technique) has several disadvantages like radiation exposure, long wait times, and poor test outcomes.⁶ Use of other advanced techniques like MRI is often limited by high cost and poor availability⁷



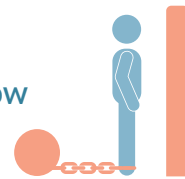
Glasgow Coma Scale

While extremely useful in clinical evaluation of TBI, its results can be often distorted by drug use, alcohol intoxication and low blood oxygen levels⁸



Other barriers include:

- Lack of standard definitions and consistency in clinical management guidelines which leads to ~50%-90% of mis- or underdiagnosed mTBI cases⁹
- Lack of awareness and education among physicians, patients and caregivers on how to identify and manage symptoms once discharged from Emergency Department



Advancements in biomarker research have the potential to transform the assessment and care of mTBI patients

Potential circulatory biomarkers to improve evaluation & management of mTBI



Glial markers

- S100B
- GFAP

Axonal markers

- Tau proteins
- Neurofilaments

Neuronal markers

- UCH-L1

Of all the biomarkers reviewed, the combination of GFAP and UCH-L1 appears to have potential in improving clinical management of mTBI due to its high accuracy in discriminating mTBI patients from healthy controls, thereby reducing the number of unnecessary CT scans.

It is however important to now focus on the clinical utility and the real-world application to further advance its use in TBI evaluation and care management.



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