MILD TRAUMATIC BRAIN INJURY AND A NOVEL DIAGNOSTIC APPROACH INCLUDING DIFFUSION TENSOR IMAGINING: A CASE REPORT

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Traumatic brain injury (TBI) is a form of acquired brain injury that occurs as a result of sudden trauma to the head. Specifically, Mild TBI (MTBI) is a clinical diagnosis that can have significant effects on an individual's life, but can remain undetectable to traditional imaging techniques.

This is the case of a previously healthy 49-year-old male who suffered significant head trauma in a work related accident, resulting in symptoms indicative of MTBI. Consequentially, he sought neurological consultation two days after the accident complaining of persistent headaches, dizziness, and neck and back pains. The patient was initially evaluated with a neurological physical examination, psychological evaluation, Acute Concussion Evaluation, and CNS Vital Signs memory testing. An initial diagnosis of severe major depressive episode and pain disorder was made. Sequentially, MRI and Diffusion Tensor Imaging (DTI) imaging studies were utilized to obtain a more accurate assessment. DTI demonstrated a reduced fractional antisotropy at the genu of the corpus callosum extending into the white matter of both the frontal and temporal lobes. These results were undetectable by MRI and indicative of posttraumatic gliosis, as seen in MTBI.

MTBI is a common injury with a variable clinical presentation. The system of diagnosis used in this case revealed a significant relationship between the clinical assessment and imaging results. This would not have been possible using traditional imaging techniques and highlights the benefits of using DTI in the sub acute assessment of MTBI.