



Blood Test Unmasks Concussions Absent on CT Scans



It has been highlighted that patients suffering from a concussion can have CT scans which show no irregularities and patients can go on to be discharged with no further treatment. A new, cost-effective blood test may be able to identify these patients for subsequent evaluation.

The study, from UC San Francisco, analysed 450 patients who had obtained a traumatic brain injury (TBI) usually from a fall or a road accident. After being admitted to a level 1 trauma centre, the results from these patients' CT scans had come back as normal. Participants of the study had their blood glial fibrillary acidic protein levels estimated – a common marker in TBI patients – by using a blood analyser from Abbott Laboratories, the i-STAT™ Alinity™ to rapidly-produce test results.

An MRI was then used to confirm the results of the blood test due to the sensitivity of the scan. It was found that 27% (120/450 of the CT-negative patients) had a TBI confirmed by MRI scan. To confirm the accuracy of the blood test, this CT-negative cohort, with TBIs confirmed by MRI, were compared to orthopaedic injury patients and also to healthy individuals.

The results of the study showed the average protein level in the blood of the CT-negative, MRI-positive TBI patients were 31.6 times higher than in orthopaedic patients and 52 times higher than in healthy individuals. Protein levels were also found to be higher in some patients with normal MRI scans, indicating that the blood test could be a more sensitive method than MRI for confirming concussions.

First author on the study, John Yue, MD, stated that the blood test being developed could help physicians in the decision to conduct CT scans, saving unnecessary patient exposure to radiation. Another benefit for using the blood tests would be if the practising physician was unsure if the patient's symptoms were influenced by substance use, as concussion and intoxication can present similarly. Yue also stated that the blood tests could also help if the patient has co-existing medical conditions or medication that could affect behaviour or speech.

Senior author of the study, Geoffrey Manley, MD, PhD, emphasised the fact that patients suffering from concussions today are not getting the diagnosis they need with the current protocol. Manley is also involved in the TRACK TBI initiative, which has gathered clinical data from 3300 patients for analysis. This current study follows on from a previous TRACK TBI study which highlighted 30% of those with CT-negative but MRI-positive results went on to develop a disability three months after the initial injury.

The sensitivity and accuracy of blood-based biomarkers could see it influencing the way TBIs are diagnosed and treated in the clinical setting.

Source: [University of California San Francisco](#)
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