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Predicting neurological ailments involving blood-brain barrier disruption through a non-invasive cost-effective clinical biomarker

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Abstract

The human blood brain barrier (BBB) besides protecting brain also guarantees unhampered synaptic transmission. This protective sheath of the brain gets compromised in several acute and chronic neurological disorders. Among the available techniques magnetic resonance imaging (MRI) scans by injecting gadolinium contrast agents and several variations of this technique are used to ascertain blood brain disruption, however, consensus regarding authentic biomarker for BBB disruption is still being awaited. Furthermore, in several developing and underdeveloped countries hospitals are not equipped with sophisticated MRI facilities. As such there is need for reliable, cost effective techniques to evaluate neurological ailments associated BBB disruption.

Available *in vitro* BBB model are unable to provide reliable information about the disruption of this neuroprotective sheath *in vivo*. We evaluated clinical and biomedical literature available in relevance of BBB disruption and associated biomarkers. Our analyses reveal that low molecular weight acidic protein S100□ can be a better biomarker when compared with other highly sophisticated techniques or systemically releases proteins/peptides reported in literature. This information is based on available literature in public databases and PubMed. Standardization and recognition of a clinical biomarker associated with blood brain barrier disruption biomarker will provide us an opportunity to screen neurological ailments in populations prone to neurological disorders and particularly among aging people.