

## Research on Post –Traumatic Neurodegenerative disorders from India

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Traumatic brain injury (TBI) is a major public health burden in our country, due to accelerated urbanization, unprecedented motorization, growing industrialization, changing life styles and absence of safety policies among people. In 2002 it was estimated that 1.6 million Indian populations sustain traumatic brain injury with 200,000 deaths (1). TBI continues to pose a serious public health challenge, with numerous deaths at the scene and a large percentage of surviving patients have lifelong disabilities.

TBI is a diseases process not an event. Any severities of brain injury manifest problems in multi spectrum that lasts for days, months, years, sometimes the post traumatic sequel continues throughout the life. Such changes includes cellular and sub cellular inflammation that cause significant effect on patient cognitive, behavioral and personality level. Among sensitized individuals the chronic pathological changes can lead to neurodegenerative conditions.

Dementia is a neurodegenerative condition characterized by progressive memory loss with other mental deficiency. In India there is increase in prevalence and incidence of dementia. As per urban reports from several

regions of our country the prevalence of dementia in India ranges from 0.8 to 4.1%. The percentage varies from north, south, east and west due to multi ethnic, multi-cultural and environmental differences (2). A study among Kashmiri Pandit population from north India has reported that the incidence rate of dementia is 5.34 per 1000 person-years (3). Apart from ageing, positive family history, illiteracy, and low socio economic status the non-communicable diseases like stroke and brain injury form a major risk factor for progressive dementia. Unfortunately, the published Indian literature on post traumatic dementia is still far short of the actual need.

Studies from developed countries have reported that TBI is an important risk factor for later cognitive decline, which has been linked to development of dementia and chronic neurodegenerative conditions (4-6). Delayed progressive persistent neuro-inflammation have been demonstrated among TBI cases by both histopathological and neuroimaging studies (7, 8). Among chronic neurodegenerative conditions Alzheimer's constitutes about three fourth of cases, followed by dementia with Levy bodies and vascular type (6). Several studies have reported that

patients with moderate to severe TBI are at higher risk of developing Alzheimer's disease (4). Recent studies have reported that repetitive mild TBI (also concussion injury) have linked to increased risk for chronic traumatic encephalopathy (CTE) a variant of neurodegenerative diseases (9). Studies are focussing on exploring possible reason and also any targets that can reduce or completely treat post traumatic progressive neuro inflammation responsible for neuro degenerative diseases.

Our country has enough resources with respect to both TBI and dementia, but the research in this area is limited. The geriatricians, neuroscientists, and clinicians should integrate to improve the research quality in TBI and neuro degenerative disorders. Translation research in this area is very crucial for epidemiological and intervention research that aimed to reduce or prevent the disease condition.

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