

EDITORIAL**Wartime neurology****Jithangi Wanigasinghe**


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War and armed conflict cause a significant loss to civilian lives and is a major cause of long-term disability. This includes the burden of neurological emergencies and the significant, but underappreciated neurological consequences in the affected. This occurs due to direct neurological injury as well as the indirect effects related to restricted access to healthcare facilities and healthcare providers. Unlike a natural disaster, these crisis situations are often protracted. Presently the world is experiencing such catastrophic humanitarian crises in at least two regional locations.

Epidemiology of combat related neurological injuries shows men being more frequently affected than women. It may rise even up to 96%, as reported during the Syrian war.¹ This is predominantly in the young (18-44 years), as they bear a greater responsibility towards family income. The most common mode of injury is related to gunshot and blast injuries. Women and children are also vulnerable, particularly when attacks target civilian residential neighbourhoods and schools. The injuries cause significant physical, emotional, and cognitive challenges to the affected children and their families. The reported mortality rates in children range from 3-47%.² This is particularly evident in the ongoing Israeli-Palestinian conflict.

Head injuries are the most common form of neurological injury. They are caused by blast injuries related to explosive devices (57%), followed by ballistic injuries caused by gunshots (29%) and fragment injuries (14%). Intracranial haemorrhage is reported in up to 35% of cases.¹ The percentages would vary depending on the type of weaponry used. Shrapnel injuries are commoner in fire exchange and open battlefield conflicts. Intracranial haemorrhage and blast injury are seen when missile and mortars are used as artillery.

The care for these neurological injuries is hampered by the collapsing healthcare services during war, already overwhelmed with casualties. Limitation in neurology care includes reduced or nonavailability of neurologists and neurosurgeons, intensive care facilities, theatres and medications in war-stricken regions to attend to emergencies. Lack of experience in transporting, triaging, assessing, and managing war-related injuries also contribute to the inadequate care of the injured.

Injury management included immediate surgery in 15% of admissions; reported in a study from Syria in which the main surgeries performed included foreign body removal, repairing meninges and haemorrhage evacuation. Delayed surgery was reported in another 14%.³ Complications affected one third of patients. Infection, seizures, haematomas and herniation were the most common. The outcome varied depending on the severity. The Glasgow coma scale (GCS) on admission correlated significantly with mortality and neurological deficits on discharge. A very low GCS was associated with a mortality rate of 82% and disability on discharge in 90% of survivors. The mortality rate was less than 5%, with 70% being discharged without disability, in those with a higher GCS.¹

Apart from the brunt related to acute injury, neurologists may experience an increase in chronic neurological disorders. Exacerbation of these conditions during times of crisis



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and stress is well known. This may result in an increase in seizures in persons with epilepsy and worsening or exacerbation of disorders like myasthenia gravis or multiple sclerosis. This may be related to the disrupted supply of medications. The neurologists will need to be conscious of these possibilities. Adapting innovative strategies to offer optimal care despite limitation of resources for medications or laboratory testing, will become additional skills required by the neurologist during times of such crisis.

Sri Lanka also has a war-related past history. The call for increased neurology and neurosurgical input was significantly experienced during that period. The burden of residual neurology is carried over even to this date. Resolution of conflict and peace for all is our wish for the new year 2024, as part of our attempts to safeguard global brain health.

KEYWORDS

War, neurological emergencies, conflict

REFERENCES

1. Hanafi I, Munder E, Ahmad S, et al. War-related traumatic brain injuries during the Syrian armed conflict in Damascus 2014-2017: a cohort study and a literature review. *BMC Emerg Med.* 2023;23(1):35. doi: 10.1186/s12873-023-00799-6
2. Aguirre AS, Rojas K, Torres AR. Pediatric traumatic brain injuries in war zones: a systematic literature review. *Front Neurol.* 2023;14:1253515. doi: 10.3389/fneur.2023.1253515
3. Jamous MA. Outcome of craniocerebral penetrating injuries: Experience from the Syrian war. *J Neurol Surg A Cent Eur Neurosurg.* 2019;80(5):345-52. doi: 10.1055/s-0039-1683878