



TRANSIENT TRAUMATIC CEREBELLAR CONCUSSION SYNDROME – A CASE REPORT

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ABSTRACT According to Sport Group 2012 consensus definition, Concussion is a complex patho-physiological process affecting the brain resulting in alteration of brain function, that is induced by non-penetrating biomechanical forces, without identifiable abnormality in standard structural imaging⁽¹⁾. Concussion symptoms are usually rapid, short-lived and resolves spontaneously. Concussion is a major subset of all mild Traumatic Brain injury which leads to physical, cognitive and emotional impairment of both patient and his/her family. Even though it is classified as mild it has significant impact on patient, patient's family and their quality of life. Here, we report a case of 23 years male with transient traumatic cerebellar concussion syndrome.

KEYWORDS : cerebellar concussion, mild TBI, traumatic concussion syndrome, commotio cerebelli

INTRODUCTION:

A major concerning health problem that affects all age group causing a huge socioeconomic burden in today's world is Traumatic brain injury (TBI). Concussion can be defined as traumatic bio-medically induced complex patho-physiological process affecting the brain with no identifiable structural abnormalities on imaging studies. Concussion is not equivalent to mild TBI^(2,3) which result in functional disturbance rather than a structural injury. It is also called as "commotio cerebelli" or "contusio cerebelli". Indicators of concussions are posttraumatic alterations/deficits in alertness, coordination, cognition, strength, orientation, balance, speed of reaction and impact verbal learning in a patient with GCS 13/15. Concussion can occur without a loss of consciousness or a direct blow to the head, e.g. with violent shaking of the torso and head. These symptoms are mostly due to reduction of white matter integrity as result of a micro-structural brain injury or gray matter changes that can be visualized by newer MRI techniques⁽⁴⁾. We report a case of young adult who had a mild TBI presented to Emergency Department(ED) with concussion ataxia.

CASE REPORT :

A 23 year-old male presented to our ED with history of self fall from two-wheeler under influence of alcohol

Mechanism - self fall from two-wheeler under influence of alcohol

Injury - Occipital impact head injury

Symptoms-

- 1) loss of consciousness for 5 minutes
- 2) unstable gait

Treatment given outside - Nil, Presented directly to our department.

As per Advanced Traumatic Life Support (ATLS), primary and secondary survey was done. Primary survey was found to be normal with pulse 90/min, blood pressure 110/70mmhg, respiratory rate 17/min, spo2 98% on room air. Secondary survey - Head to toe examination showed occipital swelling and few abrasions in both hands. Focal central nervous system examination showed 5/5 power, normal tone, normal reflexes and normal sensations in all limbs. The patient had bilateral cerebellar signs of dysmetria, ataxia, nystagmus, dysdiadochokinesia, and intention tremor. Patient had difficulty in walking with wide base gait without a steady cadence and consistency in steps. Further patient was investigated with Computed Tomography- Brain which was normal. Patient was admitted and kept under observation and planned for repeat CT-brain after 6 hours which was also reported to be normal.

On Day-3, patient had partial improvement in symptoms. Hence patient was discharged and advised to follow up on outpatient basis. On follow up after 1 week, patient had a complete recovery of symptoms.

DISCUSSION:

Concussions are defined as reversible neurological dysfunction in the absence of gross brain lesions^(5,6), caused by either a direct blow to the head or neck with an impulsive force transmitted to the head. Concussions have become an international public health concern and it is estimated that about 42 million people suffer from some form of mild TBI every year⁽⁷⁾ and approximately 5–10% of the population will experience a concussion in their lives⁽⁸⁾. It is estimated that 50% of concussions go unreported⁽⁹⁾. The typical duration of clinical recovery in majority of concussions is 7–10 days, but it is estimated that 10%⁽¹⁰⁾ to 30%⁽¹¹⁾ of adolescents and 10–15%^(12,13) of adults take much longer time to recover. Post concussion injury presenting as ataxia or only unsteady gait clears in maximum duration of 1-6 months⁽¹⁴⁾. It is hypothesized that Axonal shearing in the cerebellar peduncle due to sudden acceleration/deceleration forces following head injury has been suggested as the pathology^(15,16).

Various concussion and post-concussion assessment tools are SCAT3, ImPACT, Post Concussive Symptom Scale (PCSS), Concussion Symptom Inventory (CSI), Balance error scoring system (BESS) etc can be used. No test should be used as a sole method for diagnosis. Concussion serum markers such as Neuron Specific Enolase, S100 and Tau protein can be used for prognostication of mild TBI and concussion.

Traumatic ataxia can be due to frontal lobe injuries, cerebellar contusions, cerebellar concussion injury, traumatic posterior cord injuries, vestibular injuries or brain stem injuries⁽¹⁷⁾. Concussion is primarily a clinical diagnosis that is ideally made within 24 hours of injury based on a detailed history and physical examination and a continuum of evaluation.

In our case, based on trauma mechanism (occipital impact injury) and clinical features of ataxia, traumatic cerebellar injury was suspected. Further clinical examination confirmed the diagnosis. On the contrary, serial CT brain was completely normal which lead to the diagnosis of traumatic cerebellar concussion ataxia which completely recovered dramatically over a period of 1 week duration.

CONCLUSION:

It is important to have a working knowledge regarding pathophysiology, injury pattern and clinical feature of concussion injuries which helps in diagnosis and excluding other causes of traumatic ataxia. Generally, wait and watch approach should be used while treating a concussion syndrome which usually recovers over a period of time.

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