

# PRIORITY AREA 7: INJURIES, ACCIDENTS AND VIOLENCE

---

## **Topics**

<i>Hyponatremia in Patients with Traumatic Brain Injury: Etiology, Incidence and Severity Correlation.....</i>	<i>2</i>
<i>Epidemiological Study on Injury and Violence in Nepal.....</i>	<i>4</i>

# **Hyponatremia in Patients with Traumatic Brain Injury: Etiology, Incidence and Severity Correlation (2009)**

Lohani S<sup>1</sup>, Devkota UP<sup>1</sup>

<sup>1</sup>National Institute of Neurological and Allied Sciences, Bansbari, Kathmandu, Nepal.

## **Background**

Hyponatremia is common in neurosurgical population, prominently in patients with Sub- Arachnoid Hemorrhage (SAH) and Traumatic Brain Injury (TBI). Two common etiologies, namely the Syndrome of Inappropriate Anti-Diuretic Hormone (SIADH) and Cerebral Salt Wasting Syndrome (CSWS), are primarily responsible. Differentiation among two conditions is based on volume status of patient. Given a typical case scenario, distinction might not appear difficult. Yet, exceeding number of cases have a borderline picture with diagnostic confusion and impediment in therapeutic intervention. Researchers are thus making an attempt of differentiation based on biochemical alterations.

## **Methods**

This is a prospectively designed study on hyponatremia in patients with Traumatic Brain Injury. All patients above 16 years with moderate to severe head injury and mild ones with intracranial lesion on CT scan were enrolled in the study. Over a period of 6 months, 40 patients fulfilled the criteria. Serum sodium level was monitored daily till 14th day. Central Venous Pressure (CVP) measurement was done for the assessment of volume status. All patients with moderate or severe head injury and those who underwent surgical evacuation of lesion had routine Central Venous Pressure catheter insertion. In the remaining, Central Venous Pressure was inserted after detection of hyponatremia. Correct position of Central Venous Pressure catheter was confirmed in all the cases with postprocedure check x-ray; with contrast injection if necessary. Measurement of Fractional Excretion of Uric Acid (FEUA) was done in all cases at the detection of hyponatremia and after its correction.

## **Results**

Of 33 patients that remained for analysis, nine (27.27%) developed hyponatremia. Mean age of hyponatremic patients was 38.44 years with 55.6% patients of 17-30 age group, and male to female ratio of 3.5:1. Mild, moderate and severe head injury formed 36.36, 27.27 and 36.36% respectively. Hyponatremia occurred at the same incidence of 33.33% in both mild and moderate injuries, while in severe cases, the incidence was only 16.66%. Hyponatremia was seen in Rotterdam CT score two, three and four in increasing incidence of 22.2, 33.3 and 44.4% respectively (r 0.983, p value 0.017), while there was no significant correlation with initial Glassgow Coma Scale (p value 0.15).

## **Conclusions**

Hyponatremia is common in traumatic brain injury, with an incidence of 27.27% among high risk patients. Most of them can be attributed to Syndrome of Inappropriate Anti Diuretic Hormone, though Cerebral Salt Wasting Syndrome also occurs in a few. CT scoring of injury has better correlation to its occurrence rather than initial Glassgow Coma Scale. With prompt identification and treatment, hyponatremia doesn't result in prolonged hospital stay or any undue morbidity and mortality. Measurement of Fractional Excretion of Uric Acid doesn't appear consistent enough for the differentiation of Syndrome of Inappropriate Anti Diuretic Hormone or Cerebral Salt Wasting Syndrome.

**Keywords:** etiology; hyponatremia; incidence; severity; traumatic brain injury.

## **Epidemiological Study on Injury and Violence in Nepal (2009)**

Nepal Health Research Council, Ramshah Path, Kathmandu, Nepal.

### **Background**

Non-communicable disease contributes to severe disability and morbidity than communicable disease which directly affect on nation's development. Especially burden of injuries are rising throughout world with more than 90% of deaths in South East Asian Region. Nepal being part of South-East Asia region therefore can't be isolated from injury burden. Assessing magnitude of injury can therefore be used as useful tool to quantify burden of morbidity due to injury which further will be a scientific evidence for the review, amendments and implementation of already formulated draft national action plan for injury prevention.

### **Methods**

The study was retrospective descriptive in nature. The time period of the study was from mid-July 2008 to mid-June 2009 (fiscal year 2065/66 BS). Data were collected from five regions of Nepal including at least two tertiary care centers from each region. A format was developed to enter the data according to name, address, age, sex, cause of injury and diagnosis. Similar format was developed in MS Excel for the hospitals where the data were stored in electronic version. The collected data were, then, entered into Microsoft Excel. The data were transferred to SPSS 13 after the completion of data editing and cleaning. Analysis was done using SPSS version 13.0.

### **Results**

Total number of injury recorded in selected tertiary care centers of Nepal from mid-July 2008 to mid-June 2009 was 37973. Unintentional injuries is seem to be nearly 3 times higher than the intentional injury of which road

traffic accident and fall related injuries contribute higher percentage. In terms of cause of injury, road traffic accident (RTA) is the major cause of injury in Nepal with more than 28 % followed by falls (26.5 %) and interpersonal violence (21.8 %). Male populations are mostly affected in every injury related events in Nepal except in poisoning (47% Vs 53%). Central region has the highest proportion of injury which is approximately 50% of total injury case in the country. It shows that there is high burden of injury among the age group 15-44 years, which is the economically active group. The prevalence of injury is found to be 15 per 10,000 populations at national level. Road traffic accident is highly common in 15-29 year age group which accounts 44 % of the total injuries. Central and eastern development region is reported to have the highest distributions of interpersonal violence which account for 33% in each region. Fire related cause is most common in male than in female and most affected age group is 15- 29 years.

### **Conclusions**

Injury is one of the major public health problems in Nepal which till now is a neglected problem from policy as well as program perspective. The prevalence of injury is 15 percent at national level which is only the tip of iceberg.

**Keywords:** drowning; injury; intentional; poisoning; prevalence; road traffic accidents; unintentional; violence.