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Commentary

# Prehospital Care for Head Trauma

The authors of this article discussed very important problems which many of developed countries do face. Prehospital care and transportation of road traffic accidents' victims to hospitals have a significant impact on the outcome head trauma.[1-3] I cannot agree more with the authors' statement. "It is evident from the study that the factors which affect the outcome of traumatic brain injury are influenced by prehospital care and establishing guidelines and protocols for prehospital management of traumatic brain injuries can definitely contribute to improving the outcomes in TBI." This manuscript showed the current status of patient's transportation to the hospital, which has direct impact on the deterioration of the patient's condition and increases the risk of mortality or severe morbidity. The authors of this articles revealed the failure of prehospital care in their country as none of the 830 patients, who are included in the study received any form of prehospital care and showed as well that 65.4% of these patients had been transported by what wrongly called ambulances! While 33.1 were transported by private vehicles. Transportation of the patients by nonprofessional well equipped and well-trained emergency medical services (EMS) staff may cause secondary central nervous system damage due to:

1. Denying the patients the vital and badly needed urgent care, such as intubation, stop bleeding, replacement of blood loss and manage the shock may cause cerebral, ischemia, hypoxia and hypotension[3]
2. Loose and wasting time to rich the proper hospital, where neurosurgical or trauma units are available. Many patients died in cars touring between nonspecialized hospitals where no neurosurgeon nor trauma surgeon nor Intensive Care Unit (ICU) beds nor computed tomography-scan facilities
3. The concept of golden hours (which is definitely far <60 min) is simply lost with an unnecessary delay to provide urgent care and urgent neurosurgical intervention if needed. Such delay may be the cause of brain herniation due to failure to control the intracranial pressure (ICP)[4,5]
4. The risk of permanent severely damage of cervical spinal cord is high with such methods of transportation, is significantly high.

Most of the international guidelines of management of head trauma include the premedical care.[6,7] These guidelines draws effective plans for management of head trauma which we summarize in these steps:

- Effective and emergency medical network of communication should be available and known to the public
- At the site of trauma, complete, careful, and professional examination by EMS and paramedics. The examination should include:
  - Airway: Secure patent airway and ensure sufficient supply of oxygen. Cervical spine must be protected
  - Breathing: The respiratory rate check rate and type of breathing should be examined
  - Circulation: Every effort should be made to avoid and treat the shock. Examination of the pulse, blood pressure, and capillary refill should be made rapidly but accurately. Identify sources of bleeding which may cause hypotension
  - Disability: Complete neurological examination should be performed, includes Glasgow coma scale (GCS), size of both pupils and light reflexes
  - Expose: Find out other associated injuries in abdomen, chest, and limbs.
- Neck (cervical spine) stabilization. It is recommended to apply hard neck collar
- Intubation, every patient who may score according to GCS 8 or less and revised trauma score 8 or less should be intubated at the site of injury
- Wound initial care; wounds should be cleaned and bleeding should be controlled with compressing or tight bandage. Penetrating objects should not be removed or moved
- Open veins; usually 2 large gauge veins should be opened
- Intravenous (I-V) fluids
  The aims of I-V fluids infusion is to maintain blood pressure and good circulation. Control ICP and prevent brain edema is vital goal. Hyperglycemia should be avoided too
- In cases of suspected limb injury, that limb should be stabilized
- In cases of pneumothorax, hemothorax and pneumohemothorax chest tube should be inserted either in the site of injury or in the ambulance
- Adequate and safe sedation
- Disaster control, assurance and calm the victims, loved ones and the surroundings.

## Transportation

Transportation should be made by the EMS (ambulance service). The trained staff should perform these tasks:

1. Triage
2. Initial and proper diagnosis
3. Rapidly transport patients to the right hospital where the definite management will be provided (guided by

the Emergency Committee)
4. Professional and efficient medical care during transportation, continuous evaluation, maintain good oxygenation, I-V fluids.

## Conclusion

To improve this bad situation several steps should be taken:
1. Good training for qualified EMS and premedical staff to be able to perform proper recitation and examine the patient and stabilize the neck and proper transportation
2. Hotline and medical control room should be established in every region of any city, where complete information about all the facilities available in every hospital in the area and the availability of ICU beds and specialized medical staff. Such important information should be updated by minutes and should guide the medical ambulances to transfer the victim to the right hospital
3. Litigations should be made to prevent public from transporting victims of trauma and to force the private hospitals to receive such patients and initiate their treatment and safe their lives free of charge
4. Strict and periodically updated protocol should be developed in every country guided by the international guidelines for managements of head trauma. The local doctors, nurses and paramedical should be regular trained and certified for advanced trauma life support.

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