

Changes in pCO₂ During Air-Medical Transport of Children with Closed Head Injuries

Allyson L Davey, MD;¹ Andrew J. Macnab, MD, FRCPC;¹ Gordon Green, MD, FRCPC²

1) Department of Pediatrics, University of British Columbia, Vancouver, British Columbia, CANADA; 2) Pediatric Transport Team, Children's and Women's Health Centre of British Columbia, Vancouver, British Columbia, CANADA, now University of West Virginia USA

Introduction: Inappropriate management of pCO₂ following head-injury can adversely affect outcome. We studied whether the optimal pCO₂ level was maintained in ventilated children with closed-head injuries transported by paramedics, and whether hand-bagging or mechanical ventilation resulted in better pCO₂ levels.

Methods: Hospital charts and transport records were reviewed for all head-injured children transported by a specialized paramedic team to tertiary care over a 12-month period. All of the children were intubated and mechanically or manually ventilated. Outcome measures were final pCO₂ prior to transport and first pCO₂ on arrival in the ICU.

Results: 29 children (age 0.6 to 16 years, median 6 years) met the criteria, 14 hand bagged (HB) and 15 mechanically ventilated (MV). 11 patients started in the target pCO₂ range of 35–45 mmHg: 5 HB and 6 MV. Following transport, 1 hand-bagged patient and 9 mechanically-ventilated patients had pCO₂ values within the target range. The duration of transport (range 15–200 minutes) did not contribute to final pCO₂ level.

Conclusions: Mechanical ventilation is preferable to hand-bagging. Those managing head-injured patients in a disaster need to be aware that hand-bagging significantly increases the incidence of sub-optimal pCO₂ levels and the risk of sub-optimal cerebral blood flow, and that monitoring of CO₂ (e.g., by point-of-care testing) is desirable.

Keywords: closed head injury; CO₂; monitoring of; pCO₂; transport; ventilation

E-mail: amacnab@cw.bc.ca

Methods of Self-aid and Mutual-aid of the Injured in Earthquake and Points for Attention

Jiren Gao; Guiling Zhong

Military Medical Service Department of the Second Military Medical College, Shanghai, CHINA

Self-aid and mutual-aid for the injured in an earthquake generally is carried out by the survivors and the injured before the arrival of exterior rescue teams. Such actions have great significance in lowering the mortality and alleviating the pain of the injured.

First, according to the disaster relief experiences from the 1976 Tangshang Earthquake, the procedures of self-aid and mutual-aid of the person under ruins were identified and included exposure of the head and chest first followed by the provision of food, boosting the confidence of the trapped that they will be saved and to hold on, etc.

Second, the authors introduce kinds of organization that are helpful to the provision of mutual-aid for the masses, which include mutual-aid for the family, mutual-aid for those injured located on the streets, mutual-aid among rescue units, and mutual-aid implemented by militia and the Peoples' Liberation Army (PLA).

Finally, the presentation directs attention to the course of the rescue efforts: 1) Search for the injured carefully; 2) Diagnose the condition of injury correctly; and 3) Treat the condition of injury promptly. Several examples from the activities associated with the Tangshang Earthquake are used to illustrate the views of authors. Each of these experiences should be applied in future Disaster Medicine relief.

Keywords: assistance; disaster; earthquake; initial aid; lay public; organization; plans; priorities; rescue; survivors