CORRESPONDENCE

The Impact of Arterial Hypertension on Polytrauma and Traumatic Brain Injury

by Dr. med. Timur Nils Sellmann, Dr. med. Daniel Miersch, Prof. Dr. med. Peter Kienbaum, Prof. Dr. med. Sascha Flohé, Dr. med. Johannes Schneppendahl, Prof. Dr. rer. medic. Rolf Lefering in volume 49/12

Differences Between Groups

Compared with the group of normotensive patients (group “Normotension”), the group of patients with persistent hypertension (“Hypertension”) showed the worst results, except for hypotensive patients (“Hypotension”).

The fact that hypotension in trauma patients is correlated with a poorer outcome is hardly the subject of controversy (1).

Closer consideration of the groups “Normotension” and “Hypertension” raises attention for the fact that two dissimilar groups were compared:

The patients in the “Hypertension” group had more combination injuries. The relative sum of separate injury entities to the cranium (for example, epidural hematoma, subdural hematoma, cranial fracture) was 136.2% compared with 107.9% in the “Normotension” group. The main reason for this is the high proportion of subdural hematomas in the “Hypertension” group (41% vs. 24.4%). Mortality due to acute subdural hematoma is high, in spite of early surgical treatment, at 40–60% (2).

Unfortunately, the proportional distribution of the Abbreviated Injury Scale values for the head was not further analyzed in the respective subgroups.

An explanation for the fact that the patients in the “Hypertension” group had a lower injury severity score, in spite of their suspected more serious head injuries, may be the lower frequency of severe comorbid injuries (AIS ≥ 3) to the thorax, abdomen, and extremities (37.7% vs. 75.1%).

Furthermore, the average age of patients in the hypertension group was notably higher (59.7 years vs. 41.2 years). This is a further factor for a poorer prognosis (3).

It remains unclear whether the lower rate of preclinical intubations in the “Hypertension” group affected the result.

I am not intending to call into question a possible association between hypertension and poor outcomes after traumatic brain injury. However, the conclusion reached by the authors is not supported by their data. The subgroups are far too lacking in homogeneity for confounders to be ruled out.

DOI: 10.3238/arztebl.2013.0288a

REFERENCES

1. Franschman G, Peerdeman SM, Andriessen TM, et al.: Effect of secondary prehospital risk factors on outcome in severe traumatic brain injury in the context of fast access to trauma care. *J Trauma* 2011; 71: 826–32.
2. Leitgeb J, Mauritz W, Brazinova A, et al.: Outcome after severe brain trauma due to acute subdural hematoma. *J Neurosurg* 2012; 117: 324–33.
3. Yuan F, Ding J, Chen H, et al.: Predicting outcomes after traumatic brain injury: the development and validation of prognostic models based on admission characteristics. *J Trauma Acute Care Surg* 2012; 73: 137–45.
4. Sellmann T, Miersch D, Kienbaum P, Flohé S, Schneppendahl J, Lefering R: The impact of arterial hypertension on polytrauma and traumatic brain injury. *Dtsch Arztebl Int* 2012; 109(49): 849–56.

Dr. med. Armin Luger

Klinik für Unfallchirurgie und Orthopädie, Johannes Wesling Klinikum Minden
armin.luger@muehlenkreiskliniken.de

In Reply:

We did not intend to investigate in our study the known poorer outcome in hypotensive patients with multiple injuries, but this conclusion has been confirmed again by the data collected in our study.

The key message of our study was, however, the risk of trauma patients with pre-hospital arterial hypertension, whether transient or persistent.

We thank our correspondents for mentioning the high mortality associated with subdural hematoma, which undoubtedly had a negative effect on the outcomes in the hypertension group.

Further analysis of the proportional distribution of the Abbreviated Injury Scale scores for the head in the respective subgroups would have not resulted in a different conclusion. The low injury severity score in the hypertension group is indeed due to the smaller amount of severe comorbid injuries. The older average age as a predictor of a poorer prognosis in this group needs to be borne in mind. Whether the lower pre-hospital intubation rate affected the result is the subject of interpretation only but cannot significantly analyzed by using the available data from the trauma registry. However, further studies are planned with regard to excluding potential confounders.

DOI: 10.3238/arztebl.2013.0288b

REFERENCES

1. Sellmann T, Miersch D, Kienbaum P, Flohé S, Schneppendahl J, Lefering R: The impact of arterial hypertension on polytrauma and traumatic brain injury. *Dtsch Arztebl Int* 2012; 109(49): 849–56.

Dr. med. Daniel Miersch, Düsseldorf
d.miersch@kh-neuwerk.de

Conflict of interest statement

The authors of all contributions declare that no conflict of interest exists.