

## Commentary

In the paper, entitled 'Prognostic significance of age in traumatic brain injury' (TBI),<sup>[1]</sup> the authors found that age was significantly associated with mechanism and severity of TBI, with CT findings, treatment factors, and with outcomes of patients after 6 months. An importance of age for the severity and outcome of TBI has been recognized by some other important studies.<sup>[2]</sup> Age has been included as one of the key prognostic parameters in virtually all prognostic models for TBI outcome developed so far.<sup>[3]</sup> The presented paper, along with confirming the significance of age for TBI, provides some additional information on this relationship, which is worth mentioning further.

One important aspect is that the sample analyzed in

the study consists of pediatric as well as adult patients. Thus, the paper provides an insight into the whole age range of TBI patients, as opposed to studies which deal either solely with adult or with pediatric injuries. It provides the means to compare characteristics of pediatric and young patients with adults both drawn from the same population. The distinction in mechanism, severity, and outcome between these groups is clearly documented.

The authors included patients with the whole range of TBI as to severity. The ratio of mild, moderate and severe TBI in a number of published studies is within 64% - 95%, 3% - 23% and 2% - 11%, respectively of all analyzed TBI patients.<sup>[2]</sup> This paper presents a

ratio of 25% mild, 16% moderate and 59% severe TBI. The shift of the sample towards higher proportion of severe cases might be partly caused by the sampling strategy of the study (a single high-end center), but also may indicate different severity distribution within the target population. A population based study may bring further clues.

A valuable addition to the available information is the analysis of CT scans in the context of age. The results are consistent with the findings of previous studies<sup>[4,5]</sup> and present a detailed insight. The distribution of injury mechanisms is clearly different within different age groups. Falls are the leading cause of TBI in the young and elderly patients, and traffic related injuries in middle-aged patients. This finding corresponds with results of other studies<sup>[2,4]</sup> and can be an argument for the public health sector in setting priorities for action in different age groups.

The most important finding of the paper is that an age is 'significantly associated with unfavorable outcome at 6 months, in stepwise manner centered on the threshold of 40 years'.<sup>[1]</sup> Hukkelhoven *et al.*<sup>[6]</sup> in their study argue that age is continuously associated with worsening outcome, and transforming it to a discrete variable (as it is often the case) should be avoided. However, studies using both approaches clearly showed that an increasing age is significantly associated with worse short and long term outcome.<sup>[2-8]</sup> Maas *et al.*<sup>[7]</sup> in their paper demonstrated the increasing median age of TBI patients in the course of time ranging from 25 years in a 1980's study to 48 years in a study from the early 2000's.<sup>[8]</sup> Considering the clear relationship between an increasing age on one side and increasing severity, worsening outcome and subsequent increasing costs for medical and rehabilitation care on other side, one can expect important implications for public health or health care services. This paper is a valuable addition to the available information on this topic.

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