

Most patients returned to previous occupational level 1 year after head injury

van der Naalt J, van Zomeren AH, Sluiter WJ, et al. *One year outcome in mild to moderate head injury: the predictive value of acute injury characteristics related to complaints and return to work.* *J Neurol Neurosurg Psychiatry* 1999 Feb;66:207B13.

Question

In patients with mild to moderate head injury, what is the prognostic value of acute injury characteristics and duration of post-traumatic amnesia (PTA) on disability, complaints, and return to work at 1 year?

Design

Inception cohort followed up for 1 year.

Setting

Groningen, the Netherlands.

Patients

70 patients (mean age 33 y, 61% men) who had a Glasgow Coma Scale (GCS) score on admission between 9 and 14 and a duration of PTA of ≥ 1 hour. Exclusion criteria were previous hospital admission for head injury, drug or alcohol addiction, psychiatric disorder or mental retardation, severe aphasia, or PTA lasting > 28 days. 67 patients (96%) were available for 1 year of follow up.

Assessment of prognostic factors

At hospital admission patients were assessed with the GCS and the degree of PTA was determined twice daily. At 1, 3, 6, and 12 months after the injury, patients received a neurological examination and filled out a checklist of complaints (19 common sequelae of traumatic head injury).

Main outcome measures

Disability as measured by the original Glasgow Outcome Scale (GOS) with 5 outcome categories, an extended GOS with 8 outcome categories (GOS-8) (6 = moderate disability, minor adjustments required for return to work, 7 = good recovery with minor physical or mental deficits, 8 = good recovery), and a more

detailed outcome scale (DOS) (4 subscales on social, behavioural, cognitive, and physical sequelae); complaints; and return to work.

Main results

86% of patients reported complaints at 1 year. The most frequent complaints were fatigue, drowsiness, forgetfulness, poor concentration, irritability, and headache. At 1 year, 73% of patients had returned to previous jobs or study (table). According to the GOS, good recovery was seen in 82% of patients; 18% had moderate disability. The GOS-8 showed fewer patients with good recovery (table). The DOS scores were comparable to the GOS-8. PTA was associated with both disability and return to work. 47% of patients with PTA lasting > 14 days were considered to have moderate disability. Patients who were not able to resume previous activities had a longer duration of PTA than those who resumed work without problems (mean PTA 12.6 v 5.9 d, $p < 0.01$). The GCS did not correlate with outcome scores or return to work.

Conclusion

In patients with mild to moderate head injury, duration of post-traumatic amnesia was the strongest predictor of disability and return to work at 1 year.

Outcomes in patients with head injury after 1 year

	Proportion of patients (95% CI)
Return to work	73% (60 to 83)
GOS-8 Moderate disability; minor adjustments required for return to work	18% (10 to 29)
Good recovery with minor deficits	49% (37 to 62)
Good recovery	33% (22 to 45)

GOS-8 = extended Glasgow Outcome Scale with 8 outcome categories.

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Commentary

Given that 75% of hospital admissions for head injury are of the mild or moderate type, the factors that influence outcome in this group are of great clinical interest. Research in this area, however, has been plagued by various problems, including lack of agreement on classification and outcome measures.

The study by van der Naalt *et al* examines the prognostic value of the 2 most common measures, degree of PTA and GCS, in determining long term outcome after mild or moderate head injury. The most important finding is that duration of PTA and not the GCS score is the best predictor of being able to return to work. Indeed, patients with relatively high GCS scores (14) but with long duration of PTA only do as well as those with moderate head injury. The implication is that although the GCS score serves an impor-

tant clinical purpose, PTA needs to be assessed prospectively to have knowledge about prognosis.

Although all the patients in this study were able to resume previous activities, a period of 3–6 months seemed necessary for this. In keeping with past experience, the complaints were most pronounced in the first month and improved gradually after this. Most patients, despite having residual complaints, were able to resume normal activity. Outcome, although better in younger people, was not affected by education level or sex.

This study excluded patients with a history of previous head injury, alcohol use, etc. Although these data may confound results, it has been suggested that such groups should nevertheless be studied and the results analysed separately rather than excluded altogether.¹ On the other

hand, van der Naalt *et al* did not exclude patients with other physical injuries, who could have a different outcome.

Prospective studies should also address pre-injury characteristics, such as personality, and see how they correlate with outcome and behavioural change. To quote Sir Charles Symonds, "The symptom picture depends not only upon the kind of injury, but upon the kind of brain."²

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- 1 Levin HS. Neurobehavioural outcome of mild to moderate head injury. In: Hoff JT, Anderson T, Cole TM, editors. *Mild to moderate head injury*. Boston: Blackwell Scientific Publications, 1989.
- 2 Symonds C. The assessment of symptoms following head injury. *Guy's Hospital Gazette* 1937;51:461–8.