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Paraplegia

Letter to the Editor

Dear Sir,

The award winning paper 'Initial Factors Predicting Functional Performance in Patients with Traumatic Tetraplegia' Daverat *et al.*, (1990) 28: 414–419 highlights the difficulties in studying spinal cord injury (SCI) and the functional outcome.

Firstly, it is common in this area of research, to analyse lesions at all levels of a large heterogeneous sample and then to report a linear relationship between the level of the lesion and the functional outcome. Daverat *et al.* are to be congratulated for focussing on the cervical spinal cord only. Clinically, it is evident that individuals with the same functional independence often present in differing neurological deficit and vice-versa. Moreover, it appears that specific lesion levels, such as at C6, are critical to specific functional tasks, for example in their ability to transfer, and at this level a dichotomous outcome of dependence and independence is likely, this coincides with that postulated by Daverat *et al.* The ability to determine the level of independence is clearly multifactorial.

In a study conducted at the Royal Perth Rehabilitation Hospital, Western Australia, 1989, (Allison and Lee, unpublished) it was found that 43% (6/14) complete C5, C6 and C7 SCI were able to transfer independently and anthropometrical, static biomechanical (pre-lift body posture), dynamic biomechanical (body movement and force production) and final diagnosis of the level of the lesion were significant prognostic indicators.

Secondly, it is questionable whether it is appropriate to combine data for complete and incomplete lesions in analyses. Clearly, this must reduce the sensitivity of the level of the lesion/neurological deficit analysis. Daverat *et al.* reported that 47% of their subjects possessed (YSS = 0) or complete lesions. It would be interesting to analyse this group separately to see if the results could be replicated. The Daverat model declares that any complete lesion (YSS = 0) would be, at best, wheelchair dependent. Although mortality was not included in the Royal Perth Rehabilitation Hospital study, it would indicate that the Daverat model underestimates the functional prognosis of many tetraplegics with complete lesions.

Mr G. T. Allison,
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Reply from Dr P Daverat

Concerning the letter from Mr G. T. Allison, there are three points to be clarified:—

1. I do agree with Mr Allison when he says that the ability to determine the level of independence in patients with spinal cord injuries is multifactorial. But we did not find in our study that the level of the lesion was a significant prognostic indicator. One explanation could be that our sample was much greater than his (99 patients versus 14). Furthermore, the statistical analysis necessarily implied a simplification of clinical information as we studied the prognosis of an 'average person' who was not a 'given person'. The only conclusion we reached was that statistically the group of 'low tetraplegia' did not obtain better functional performance compared to the group of 'high tetraplegia', although there were several individual exceptions.

2. Mr Allison wonders whether it is appropriate to combine data for complete and incomplete lesions. Our answer is that the Cox model used in our study is a multivariate analysis, which does not reduce the sensitivity of the tests. Other published studies used univariate analyses on their data and confounding biases were likely to be present.

3. Approximately ⅓ of the patients died at 3 months in our study. These people were included in our analysis, which decreased the selection of the population but also the relative per cent of good results. That is why our model appears to underestimate the functional prognosis compared to the Royal Perth Rehabilitation Hospital Study.

I wish to thank Mr Allison for his interesting and useful comments, and I hope that they have helped to clarify the presentation of our results.

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