

DIVING INJURIES IN NEW SOUTH WALES

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Dear Editor

I read with considerable interest the retrospective paper by Mike Bennett on New South Wales diving injuries.¹ He states that in this group of divers there was no statistical evidence of improved outcome with a reduced interval between onset of symptoms and hyperbaric treatment. However in Figure 3, 9 of 48 divers (19%) treated within 24 hours had residual symptoms whereas 14 of 44 divers (32%) treated after 24 hours had residual symptoms. Simple Chi-squared analysis of these figures suggest this difference may be statistically significant, quite the opposite of Bennett's conclusions. The same is true using a 12 hour cut off.

There are several problems both with the data and its interpretation. Firstly only 92 of the 107 divers are shown in Figure 3. Where are the other 15? Secondly, the statistical methods used and the actual results of these analyses are not stated. This is unacceptable even in a quasi-peer reviewed journal such as this. In fact, neither are my own casual attempts at statistical analysis valid for these data.

A third problem is alluded to in the paper and is very important in the context of his discussion, namely that many of the sicker patients, those transported by helicopter, fall within the early referral group. This would markedly bias likelihood against finding a correlation between the time interval to treatment and the quality of outcome (severity of residual symptoms). Therefore any prospective study needs to consider admission status in the analysis of outcome.

My own conclusion from the NSW data is that there is reasonable preliminary evidence that early referral results in improved outcome. This now requires confirmation in a prospective, multi-centre epidemiological study. A previous paper has rightly been critical of hyperbaric units throughout Australasia for not providing adequate outcome data² and Dr Bennett is to be commended for his attempt to correct this deficiency.

We should also not overlook the fact that 75% of Bennett's divers made a full recovery and there were very few with major residual problems. This speaks volumes for the effectiveness of good hyperbaric management even in the delayed referral patient.

Mike Davis

References

1 Bennett M. The retrieval of diving injuries in New

South Wales. *SPUMS J* 1995; 25 (3): 142-147

2 Gorman DF and Harden M. Outcome after treatment for decompression illness in Australasia. *SPUMS J* 1993; 23 (3): 165-168

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Dear Editor,

Many thanks for the opportunity to reply to Dr. Davies' astute letter. I must take full blame for the mysterious disappearance of 15 cases in the compilation of Fig.3. in the article. This figure in fact only refers to the cases classified as DCI and so those labelled CAGE are not represented. Somehow in the course of preparing the article, I wrote an incorrect caption for this figure and for this I apologise.

The question as to analysis of the data is an interesting one. I made the decision not to include details as I felt that, in the context of a retrospective review of imperfect data, reviewed by a single author and without any measure of validity concerning outcome classification (particularly in view of the mixture of record review and telephone interview), to do so in a formal way might over-value the work. To perform statistical techniques on poor data and make conclusions can sometimes be less productive than using such data for discussion and hypothesis generating only. It was my purpose to set the scene for more exacting prospective work and to provoke some outrage by the suggestion that time may not be an important determinant for success in treatment of DCI. It is gratifying to see that someone has read the paper with sufficient interest to challenge my assertions.

I too analysed the data using a Chi-square methodology but achieved rather different results. These may be summarised as follows: 9 of 48 (18.8%) divers treated within 24 hours had incomplete resolution as compared to 14 of 46 (30.4%) divers who were treated later than 24 hours. There is an 11.6% greater incidence of residual problems in the group treated after the longer interval, however this difference is not statistically significant. Chi-square with 1 degree of freedom is 1.74, with a corresponding $P > 0.1$. We may be 95% confident that the true difference lies between 29% fewer problems in the group treated less than 24 hours or as much as 5.6% fewer in the group treated after an interval of longer than 24 hours. Analysis of those cases treated within 12 hours compared to the remainder is even less convincing (9.4% difference in favour of shorter interval group, Chi-square