Underestimation of severity of previous whiplash injuries

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ABSTRACT

INTRODUCTION We noted a report that more significant symptoms may be expressed after second whiplash injuries by a suggested cumulative effect, including degeneration. We wondered if patients were underestimating the severity of their earlier injury.

PATIENTS AND METHODS We studied recent medicolegal reports, to assess subjects with a second whiplash injury. They had been asked whether their earlier injury was worse, the same or lesser in severity.

RESULTS From the study cohort, 101 patients (87%) felt that they had fully recovered from their first injury and 15 (13%) had not. Seventy-six subjects considered their first injury of lesser severity, 24 worse and 16 the same. Of the 24 that felt the violence of their first accident was worse, only 8 had worse symptoms, and 16 felt their symptoms were mainly the same or less than their symptoms from their second injury. Statistical analysis of the data revealed that the proportion of those claiming a difference who said the previous injury was lesser was 76% (95% CI 66–84%). The observed proportion with a lesser injury was considerably higher than the 50% anticipated.

CONCLUSIONS We feel that subjects may underestimate the severity of an earlier injury and associated symptoms. Reasons for this may include secondary gain rather than any proposed cumulative effect.

KEYWORDS

Whiplash – Medicolegal

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Whiplash injuries are widely accepted to be a hyper-extension soft tissue injury of the neck. The Quebec task force suggested the term ‘whiplash-associated disorder’ (WAD) as more convenient because symptoms are not always confined to the neck.¹ Fractures are not included in the definition.

Research looking into the effects of two whiplash injuries has suggested that more significant symptoms are expressed after a second injury by a possible cumulative effect, including degeneration.² These authors found that 36 out of 37 (97%) asymptomatic patients and 27 out of 31 (87%) mildly symptomatic patients, who had previously sustained a whiplash injury, reported worse symptoms after a second injury. There was a mean time of 6.1 years between the first and second injury. Their analysis suggested that a previous whiplash injury doubles the risk of developing more severe symptoms after a second injury.

We wondered whether it was possible that patients who had two injuries were underestimating the severity of their

earlier symptoms, which might be linked to underestimating the severity of their earlier injury.

Patients and Methods

Data were collected by a single consultant surgeon from his medicolegal reports to assess subjects with two whiplash injuries. Outcome data collected were: sex, age, patient recollection of energy of previous collision, patient recollection of severity and chronicity of previous symptoms, time between first and second injury, position of passenger in car and mechanism of injury in both instances, severity of symptoms after second injury and the patient’s assessment of the second collision.

Results

From 394 case sheets examined, we found 116 subjects who had sustained two whiplash injuries. Fifty were male and 66

female, the average age was 38 years and the average time between injuries was 4 years and 11 months.

Mechanism of injury in the first accident was head-on in 17 cases, side impact in 35 cases and rear impact in 64 cases. In the second injury rates of mechanism of injury was 27 head-on, 22 side impact, 66 rear side impact and 1 car roll.

The seat position of the patient in the first accident was: 84 in the driver's seat, 26 front-seat passengers and 6 rear-seat passengers. In the second accident, 102 were in the driver's seat, 10 front-seat passengers and 4 rear-seat passengers.

Estimation of severity of the injury in terms of energy was based upon the details of the accident. Thus, simple bumper damage in a stationary or low velocity collision was classified as low energy and a high-velocity collision/car roll was classified as high energy; medium energy was defined as accidents resulting in moderate car damage. Our estimation of the severity of the second injury was 26/116 (22%) low energy, 81/116 (70%) medium energy and 9/116 (8%) high energy. Patients' recollection of the energy of the previous (first) whiplash injury was that 16 (14%) felt the severity was the same as the recent accident, 24 (20%) felt the energy was worse and 76 (66%) felt the energy was lesser. The proportion of patients claiming lesser, similar and worse previous injuries stratified by the energy level of second accident severity is shown in Figure 1. A total of 101 patients (87%) felt they had completely recovered from their first injury and 15 (13%) had not. No neurological injuries occurred in either accident. All symptoms were as stated by the claimant or subjective.

The 76 who considered their former injury of lesser severity suggested lesser symptoms as a result. Of the 24 who had felt the energy of their first injury was worse, only 8 had worse symptoms and 16 felt their symptoms were lesser or the same as the second set of symptoms. The 16

patients who felt both their injuries were similar all felt their previous symptoms were lesser; some of these earlier injuries did seem to be of more significance than the new injury, but we accepted the thoughts given on violence.

Of the 92% of patients, who had suffered a low- or medium-grade second injury, 87% felt they had lesser symptoms in the first injury.

Statistical analysis of the rates of accident severity was performed. Data analysed were from those patients in whom the injury was either lesser or worse. The proportion of those claiming a difference who said the previous injury was lesser was 76% (95% CI 66–84%). The observed proportion with a lesser injury was considerably higher than the 50% anticipated.

Discussion

In subjects suffering two injuries, we found that the overwhelming majority (87%) felt they had completely recovered from the first injury at mean interval time of 4 years and 11 months.

We also found in our set of patients that, of the 92% who suffered only a low- or medium-grade second injury, a significant percentage (87%) felt their first accident was lesser and they sustained lesser symptoms.

Looking specifically at those patients who classified their first injury as either worse or lesser, 76% claimed a lesser injury and 24% a worse injury. This was statistically significant.

There is controversy regarding a proposed cumulative and degenerative effect from whiplash injury. Khan *et al.*² found that 84% of patients complained of worse symptoms after their second whiplash injury an average of 6.1 years on. This figure was the same whether or not patients had received treatment for their injury. They postulated that this was due to degeneration of a neck already damaged structurally from a previous injury, a view that was contested by Ferrari.⁵

An explanation for our findings could be that, in our sample, we only managed to recruit patients in whom the overwhelming majority were in fact involved in minor accidents initially. Furthermore, that in these patients a cumulative insult had led to more severe symptoms in the second injury despite the fact that the vast majority had recovered from the first injury and were asymptomatic and that the second injury was of only low or moderate severity in 92%.

We recognise that there is an element of selection bias in the subset of patients consulting a specialist with a whiplash injury. These patients are theoretically more likely to have a more severe injury than the whole population of sufferers of whiplash injury, some of whom will not consult a specialist for a minor injury and minor symptoms. Thus, we may expect a proportion of our patients to have had relatively

more severe trauma than average and, hence, more likely to have had lesser trauma initially.

There may also be an element of recall bias in our population. A patient's recollection of the severity of an earlier injury may fade with time. In addition, the second injury may seem more severe due to its recent occurrence.

A fourth explanation could be that patients were underestimating the severity of their previous accident and resultant symptoms. We feel this to be the most simple and plausible explanation. This may be because of secondary gain rather than any proposed cumulative effect. They may wish to be given a greater compensation or not risk a lesser payout.

Our findings mirror a previous study looking at the perceived relationship between neck symptoms and precedent injury.⁴ They found that, in individuals who had suffered a neck injury, only 16% admitted to having suffered from neck symptoms prior to their injury whilst 84% attributed their symptoms to their neck injury. Of the study group who had no neck injury, 34% were found to suffer from neck symptoms. They concluded that patients with neck injury did not recall that they suffered neck symptoms before the injury.

There are a number of limitations in this study: data were collected from a single surgeon's medicolegal practice, assessment and classification of the severity of the first accident was arbitrarily assigned by a sole surgeon and not verified. The numbers in the study are small; however, statistical significance was achieved. One must consider the widely acknowledged increase in neck symptoms that the

general population suffer from with increasing age. However, the time interval between injuries is just under 5 years and we have primarily looked at patients' perception of violence of injury as opposed to their symptoms resulting from the first injury. Further work on the rates of severity of injury would be of value. A larger, prospective study, perhaps of all attendees to accident and emergency departments could compare the rates of severity of injury between first time and multiple victims. This would eliminate any selection bias encountered.

Conclusions

We feel that subjects may underestimate the severity of an earlier injury and associated symptoms. This may be because of secondary gain rather than any proposed cumulative effect. They may wish to be given a greater compensation or not risk a lesser payout.

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