A study of the effect of legal settlement on post-concussion symptoms

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SUMMARY

Forty-four consecutive patients with concussion for whom a medico-legal report had been written were followed up for 3-4 years after their accidents. Three cases were still pending at the end of the study. Fifty-seven per cent complained of symptoms when the medico-legal reports were written (mean interval from accident 12.9 months), 39% had symptoms at the time of settlement (mean interval 22.1 months) and 34% had symptoms one year later.

When these results were compared with a general series from the same department some years earlier, it was found that the symptoms at the time of writing the report were not significantly different from symptoms at 6 weeks in the earlier series, but the symptoms one year after settlement were almost two-and-a-half times greater than the symptoms at 12 months in the general series. No evidence could be found to suggest an organic basis for the higher symptom rate in the litigation series. It is suggested that the litigation process itself is a factor in the persistence of symptoms and this effect continues after legal settlement has been reached. Early settlement of the cases might significantly reduce morbidity.

INTRODUCTION

In two previous studies of patients with concussion (Rutherford *et al.*, 1977, 1978), the authors suggested that there was good evidence that late symptoms were influenced by both organic and psychological factors. This work was based on an unselected consecutive series of patients arriving at an accident and emergency department.

In recent years, requests to the Royal Victoria Hospital in Belfast, Northern Ireland for medico-legal reports on these patients have been forwarded to one of the authors.

(WHR). A consecutive series of these patients was studied to establish symptom rates up to one year after settlement and to compare these with the late symptom rates in the earlier series.

PATIENTS AND METHODS

From 1981 to 1983, 46 patients who had been admitted overnight to the admission ward of the Royal Victoria Hospital, Belfast, with a diagnosis of concussion, were later referred by solicitors to one of the authors (WHR) for a medico-legal report. It is the policy in this hospital that closed head injury followed by amnesia is an indication for admission. Those not requiring neurosurgical care and without any serious accompanying injury are admitted under the care of the accident and emergency department. The same author saw most of the admission cases on the following morning and, at follow up clinic, 6 weeks later. The duration of post-traumatic amnesia was assessed in all cases. This was usually done on the morning after admission, but, in some cases, at a later attendance. The time at which 999 emergency phone calls were made to the ambulance department was used to verify the time of the accident. The times of arrival at the hospital and of admission to the ward (both routinely recorded by the medical records staff) were used to establish the time at which the memory became clear and continuous, this being taken as the end point of amnesia.

When the medico-legal reports were being prepared, patients were instructed both in the importance of reporting all symptoms and avoiding exaggeration. Patients were then left to make their statements without any further prompting.

The late follow-up was conducted 2–4 years after the time of the accident. Questionnaires were sent to all patients seeking information about the time of first contact with the solicitor, the time of settlement and the presence or absence of symptoms at the time of settlement. Twenty patients replied but, in two cases, the information was inadequate and these cases were discarded. The remaining 26 cases were contacted personally by one author (CRAF) and the questionnaire completed at that visit. This proved a difficult and tedious process.

RESULTS

After the withdrawal of two cases where documentation was unsatisfactory, 44 patients remained. These formed the basis of the legislation series in this study. The general series comprised 145 patients admitted with minor head injuries to the observation ward of the same hospital and reported previously (Rutherford *et al.*, 1977, 1978).

Twenty-two patients in the litigation series were involved in road traffic accidents, 18 in assaults and four in industrial accidents. At the time of the medico-legal report, 21 patients complained of headache, seven of anxiety, five of irritability, five of dizziness, two of depression, two of insomnia and two of difficulty with their memory.

Table 1 compares the litigation series and the general series in terms of age, sex, post-

Table 1 Distribution of post-traumatic amnesia, age and sex in litigation series and general series*

		Litigation Series	General Series	X ² and P values
Post-traumatic amnesia	15 min	21 (49%)	41 (31%)	X ² = 4.350
	15–59 min	11 (26%)	46 (35%)	df 2
	60 min	11 (26%)	44 (34%)	0.2 > P > 0.1
Age	< 20 years	4 (9.3%)	43 (33%)	X ² = 9.198
	20–40 years	22 (51%)	47 (36%)	df 2
	40 years	17 (40%)	41 (31%)	0.02 > P > 0.01
Headaches at 24 h	Yes	24 (69%)	108 (74%)	X ² = 0.247
	No	11 (31%)	37 (26%)	df 1 0.7 > P > 0.6
Positive CNS signs at 24 h	Yes	5 (14%)	40 (29%)	X ² = 2.353
	No	30 (86%)	99 (71%)	df 1 0.2 > P > 0.1
Head injury caused by falls	Yes	3 (6.8%)	33 (22.8%)	X ² = 4.58
	No	41 (93.2%)	112 (77.2%)	df 1 0.05 > P > 0.02
Sex	M	33 (75%)	83 (63%)	X ² = 4.58
	F	11 (25%)	48 (37%)	df 1 0.05 > P > 0.02

*In the litigation series, PTA unknown in one case, age unknown in one case, and headaches and CNS signs unknown in nine cases. In the general series, CNS signs unknown in six cases.

traumatic amnesia, headaches at 24 h, abnormal CNS signs at 24 h and the number of patients whose accidents were caused by falls.

In respect of age, there were significantly fewer patients below 20 years of age in the litigation group, but no significant difference above this age ($X^2 = 0.65$, df 1, $0.5 > P > 0.3$). As regards sex, post-traumatic amnesia, headaches at 24 h and abnormal CNS signs at 24 h, there were no significant differences. The percentage of falls was significantly smaller in the litigation series (information was missing for headaches and CNS signs in nine litigation patients, and for CNS signs in six of the general series).

Thirty-six litigation patients (82%) had made contact with their solicitor within 2 months of the accident. The mean time from accident to medico-legal report was 12.9 months, with a range of 2–98 months. The mean time from accident to settlement was 22.1 months, with a range of 6–50 months. This includes three cases which were abandoned without any settlement, but excludes three cases still pending at the time of writing 3 years after their accidents.

Table 2 shows the symptom rates in the litigation series at the time of writing the report, at the time of settlement and one year after the settlement. For comparison, it shows that the symptom rates had fallen to 39%, but one year after settlement to only 34%.

Table 2 Symptom rates in litigation series and in general series*

	Litigation series		General series		X ² and P values
	Symptoms	No symptoms	Symptoms	No symptoms	
Litigation series at report, mean 12.9 months	25	19	74	71	X ² = 0.251 df 1
General series at 6 weeks	(57%)	(43%)	(51%)	(49%)	0.7 > P > 0.08
Litigation series at settlement, mean 22.1 months	16 (39%)	25 (61%)			
Litigation series one year after settlement	14 (34%)	27 (66%)	19 (14.5%)	112 (85.5%)	X ² = 7.17 df 1 0.01 > P > 0.001
General series at one year					

*Excludes three cases still pending at time of writing.

The symptom rate at the time of report in the litigation series was not significantly different from the rate of 6 weeks in the general series. The symptom rate one year after settlement was 2.3 times higher than the symptom rate one year after accident in the general series, and this difference is significant.

Table 3 divides the patients in the litigation series into those settled within 18 months and those settled in over 18 months, and shows the symptom rates at one year after settlement. The symptom rates among the cases settled early and later are not significantly different.

DISCUSSION

This study set out to assess the effect of being involved in litigation upon the late symptom rates in patients with concussion. It is sometimes assumed that every person who engages in a law suit automatically becomes a malingerer and will admit to no improvement until litigation has been settled. The first clear result of this study is that, by the time of writing the medico-legal reports (at a mean interval of 12.9 months), 43% of patients were already symptom free. In the ensuing 9.2 months (on average) until settlement, a further 18% became symptom free. However, in the year after settlement, there was only a small further improvement involving 5% of patients.

This is a very different picture from that reported by Miller in his classic article in 1961. However, his series of 50 patients, where 45 made a complete recovery within 2

Table 3 Symptom rates at one year after settlement by early or late settlement*

	Symptoms one year after settlement	No symptoms one year after settlement
Settled in less than 18 months	5 (31%)	11 (69%)
Settled in over 18 months	9 (36%)	16 (64%)

*Table excludes three cases, litigation still pending.

years of settlement, contained patients diagnosed by Miller as suffering from 'accident neurosis' and he may have deliberately selected flagrant examples of the condition. Some, but not all of them, had head injuries.

In comparing the late results of the two series, it can be seen that there is little difference between the symptom rates at 6 weeks in the general series (51%) and at a mean of 12.9 months (the time of writing the report) in the litigation series (57%). It is unfortunate that the authors do not have the symptom rate for sufficient numbers of the litigation patients at 6 weeks to make a direct comparison at that interval. However, the comparisons we can make show that the time it takes for a symptom rate to fall to approximately 50% is much longer in the litigation series than in the general series.

Symptom rates at one year for the general series were 14.5% compared with 57% at a mean 12.9 months in the litigation series. There is still a significant difference when one compares this one-year rate in the general series (14.5%) with the rate one year after litigation is settled (34%). This may be a more comparable stage in the more slowly evolving picture following litigation.

The difference between the two series can be explained in two ways. Patients with a bad prognosis are more prone to take legal action, or patients equivalent in severity and prognosis make legal claims because they stand to gain financially, but the experience of going through the process of litigation had a deleterious effect on the late symptom rate.

From the authors earlier studies, certain early factors which were associated with high symptom rates were identified. These included being a woman, sustaining one's accident from a fall, complaining of a headache on the morning after the accident or having abnormal CNS signs. There was no significant difference between the two series except in the case of falls which were significantly less in the litigation series.

In this series, patients did not wait for a year or two to see whether their symptoms would settle and then make a claim if they persisted. They almost all contacted their solicitors in the early weeks following their accidents.

There are not many prospective studies of symptoms following head injuries, and there is a considerable variation in the incidence of such symptoms in the different series. In an earlier study (Rutherford *et al.*, 1977), the authors found 51% of patients with symptoms at 6 weeks. Rimel *et al.* (1981) gave a figure of 84% at 3 months, compared with 60% by Wrightson & Grenwall (1980). By one year after injury, the rate in a previous study (Rutherford *et al.*, 1978) was 14.5%. Amphoux *et al.* (1977), in a study of symptoms among construction workers in France (not a prospective study), found an incidence of 49% at 1-2 years.

Tarsh & Royston (1985) have shown that, in accident neurosis, the attitude of the family may have a marked influence on the outcome. Often the family becomes over-protective towards the patient. Looking after the patient may become the dominant theme of family life. While outsiders may tend to be sceptical about the patient's symptoms, the family has total belief. If the patient had been a dominant personality, roles may be reversed and a spouse take over the dominant role. Once these family attitudes are well established, they are very difficult to reverse.

The authors have not attempted to quantify the number of malingerers. Their impression is that they form a very small percentage of the total. Trimble (1981) traced the argument between physical and psychological factors in post-traumatic neurosis from the eighteenth century up to the present day. There is nothing in this study to refute his conclusion that the condition results from an interplay of both organic and psychological factors.

If the high late-symptom rate in the litigation series is due to continuing emotional stress, then one might have expected those whose cases were settled earlier to have had lower symptom rates and those with prolonged litigation higher. The authors made this comparison and found no significant difference. There may be a critical period from accident to settlement beyond which the effects of associated emotional stress becomes relatively fixed. If so, the present interval of 12–18 months is too long.

ACKNOWLEDGEMENTS

The authors are very grateful to Dr J. D. Merrett and Mr J. McGirk from the Department of Medical Computing and Statistics, The Queen's University, Belfast, for help with the statistical tests, to Mrs Marie Loughran for typing the manuscript and to Mrs Cheryl Milligan for help in tracing the medico-legal cases.

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