Whiplash injuries

Whiplash injuries of the neck appear to have increased dramatically; they are common in both clinical and medicolegal practice. This topical and controversial subject was the theme of a recent international two-day symposium in Brussels, attended by 350 participants with a large faculty from both sides of the Atlantic. Frequent reference was made to the Quebec Task Force study on whiplash-associated disorders published in *Spine* in 1995, which emphasised the relative paucity of reliable prospective studies.

The term ‘whiplash’ merely describes one mechanism of injury. Most patients suffer either forced flexion or forced extension movements of the neck or both in quick succession. There are potentially high bending and compression forces. The term is usually taken to exclude patients with radiological fractures or subluxations: films of the cervical spine in flexion and extension are usually normal. Very rarely, there is a prolapsed disc or avulsion of an endplate.

The presumed injury, especially in minor cases, is a soft-tissue sprain, but the pathology is undefined and subject to hypothesis, despite much experimental work on human volunteers or cadavers. In experiments on volunteers, sudden changes of velocity of up to 10 km/hour did not cause symptoms, and it is interesting that people using ‘bumper’ cars at fun-fairs never complain despite the lack of head restraints.

Discussion of the epidemiology is difficult because of the varying definitions of the condition. For this reason, the Quebec Task Force preferred the term ‘whiplash-associated disorders’ (WAD). This is usually applied to rear-end collisions in which a stationary vehicle is struck from behind by another vehicle. In a few cases, lateral flexion or rotation may be important. The Quebec Task Force quoted an annual incidence of 70 per 100 000 inhabitants, but from New Zealand the figure was 16 per 100 000 and from Victoria, Australia, 39 per 100 000. Accurate figures for incidence cannot be obtained – an incidence in the UK of 250 000 per annum and in the USA of one million per annum have been suggested. In the UK, there has recently been a large increase in demand for medicolegal reports for this condition. The cause for the increase is multifactorial and therefore debatable: it is probably related to an increase in traffic and an increase in litigation. Seatbelts have been shown to reduce the incidence of severe injury and death, but may not prevent whiplash injury – there is a suggestion that they increase forces on the cervical spine in accidents.

The increase in diagnosis has been described as reaching ‘epidemic’ proportions, and the highest occurrence is between the ages of 20 and 24 years. Women appear to be twice as vulnerable as men, but the cause of this difference is unknown.

The prognosis for recovery is adversely affected by the severity of the collision, the presence of definite neurological signs, injuries in older patients and multiple injuries. The risk of neck injury is half for rear-seat occupants than for front-seat passengers. Increasing age seems to be an adverse prognostic factor, but it is uncertain whether this is related to prior degenerative changes. It has been suggested that whiplash injury may cause structural changes which predispose to degenerative disease: Parmar and Raymakers reviewed 100 patients at a mean of eight years after injury using radiological assessment. They concluded that hyperextension injury does not accelerate the development of degenerative changes. Hamer et al studied patients from a neurosurgical unit who had had anterior cervical discectomy and fusion, comparing their previous incidence of whiplash injury with that of control patients. They claimed to show an association between whiplash injury and cervical disc disease, but some of the evidence was obtained from postal review which may be unreliable.

Large prospective studies are needed to clarify this aspect, and follow-up for ten years or more is needed, with radiological changes compared with those in an age-
matched group who have not been injured. This debate has continued for years, but I have never seen a patient with proven radiological deterioration during follow-up. MRI is now often used, but the interpretation is difficult, because many completely asymptomatic subjects have ‘abnormal’ results. Several reports have attempted to describe the natural evolution and prognosis of whiplash disorders, but are remarkably inconclusive.

My general impression of the Brussels conference was that the syndrome is usually benign with limited symptoms which resolve, but that a significant minority of 6% to 18% of patients suffer permanent disability. Some authors have quoted higher figures. These differences probably relate to patient selection and it is essential that future studies are not only prospective, but state the exact source and criteria for selection. Some reviews have derived from patients seen at police stations, others from the records of accident departments and some from the self-selected attenders at special whiplash clinics. Many patients seen in medicolegal practice today have not had injuries which were reported to the police, or necessitated attendance at accident departments. A few may not even have consulted their general practitioner. This wide range of severity helps to explain the difficulties of any estimation of prognosis.

The importance of psychological factors in chronic cases with anxiety and evidence of stress is controversial, difficult to understand, and for an orthopaedic surgeon, impossible to quantify. Are psychological factors a cause of disability? This has recently been debated by Radanov et al, Wallis et al, Merskey and Shapiro and Roth.

In this issue of the Journal Gargan et al (p. 523) provide an interesting and thoughtful contribution, suggesting that the psychological disorder may become established within three months of the injury and that a significant component of later disability is psychological. This may have profound implications for both surgeons and lawyers in the assessment of medicolegal claims.

The scientific evidence to indicate how to treat such patients is sparse. Strong views were expressed at the Brussels conference that immobilisation of the neck of a patient with a whiplash injury is not effective, and that this probably prolongs the disability. Soft collars do not restrict movement and prolonged rest is detrimental. Physiotherapy is generally regarded as useful by patients.

The Quebec Task Force strongly recommended that reassurance of the patients is valuable; emphasis should be placed on the fact that there is likely to be a good clinical outcome. There is some evidence, so far inconclusive, that a short course of steroids may help. Surgical treatment is rarely necessary, but in rare cases in which definite pathological changes are proved, anterior cervical discectomy and fusion have a good prognosis if they are performed early. Rauschning found that disc protrusion was reasonably common in patients with radicular symptoms. Donner and Pettine reported good results after anterior cervical fusion in 35 patients with disabling symptoms, but only when disc pathology, and its precise level, had been diagnosed by discography. The latter is sometimes useful, but must be safe and should not be performed at other than specialist units for good indications.

The Quebec report analysed several thousand compensated claims, discovering that 64% of patients recovered within two months and 87% within six months. In this context, however, recovery is the end of disability compensation and not necessarily the absence of symptoms. Carette stated that “the majority become asymptomatic but some 20 to 40% have symptoms that are debilitating”.

Radanov stated that 18% of patients still had symptoms after two years, and found that patients referred to a clinic for treatment had a less complete recovery than those with mild symptoms who had no specific treatment. By contrast, Schrader et al in a recent paper in The Lancet reported a retrospective study of 220 patients identified from traffic police records in Lithuania. No patient was found to have additional disabling or persisting symptoms as a result of the car accident, and there was little awareness of the potentially disabling consequences of whiplash injuries. It was suggested that some reported cases from other countries may be influenced by the expectation of disability and its financial compensation.

There is very little agreement on the results of long-term follow-up. Galasko followed 413 patients for 48 months, finding that the proportion with residual disability decreased steadily to 8% at the end of four years. There was also a definite improvement in the severity of disability. By contrast, Squires et al, following a much smaller group of 40 patients for a longer period of 15 years, found that 28 (70%) continued to complain of symptoms referable to the original accident; some had improved and some had deteriorated. It is difficult to explain the remarkable difference in these two findings.

One of the problems of assessing different papers is that objective assessment of personal incapacity is impossible. An independent examiner of a late case is often faced by descriptions of symptoms and disabilities coloured by underlying psychological factors, despite the presence of good or even full movements. The Quebec Study stressed that “all studies addressing the influence of financial compensation and legal action on prognosis were flawed by substantial selection and information bias”. There seems little doubt that the prognosis may be affected by inappropriate illness behaviour. The desire of some health-care professionals ‘to do something’ may reinforce the patients’ belief that there is significant pathology. Greenough considered that compensation and wage replacement may have a significant impact on prognosis.

In a chapter of a new book, Evans discusses the relation of litigation to symptoms, noting that many clinicians and certainly the insurance industry and the defence lawyers believe strongly in the concepts of secondary gain and compensation neurosis. This view is reinforced by the
striking differences in the incidence of whiplash injury in Australia and in New Zealand, let alone the remarkable absence of the syndrome in Lithuania which suggest that litigation and the expectation of financial compensation may well have an affect on prognosis. It should be emphasised that this is probably not due to conscious malingering, but is almost certainly aggravated by gloomy reports, and by the adversarial system leading to confrontation between lawyers and the consequent prolongation of litigation.

In this confrontational atmosphere, the attitude of an orthopaedic surgeon who is invited to produce a medicolegal report, either for the plaintiff or for the insurance company, is important. The reporting surgeon should always endeavour to be independent and objective, if possible, reassuring. The truth should be stated as it is genuinely believed. When the report is written for the plaintiff, the patient should be told early on that the prognosis is good; emphasis should be given to early return to work and activity. Written comments which suggest a poor prognosis, despite the data provided by some studies, are to be deprecated. Responsible consultants must accept that plaintiffs will usually see their report and, not unnaturally, will be highly concerned to read of their adverse, gloomy future. It should be recognised that some patients will overstate their symptoms and exaggerate their problems. This may be caused by a sense of grievance that the accident was not their fault, and that liability cannot therefore be debated. When the claim drags on, sometimes for years, and particularly when there is loss of occupation and of vital income, the grievance is reinforced by repeated interviews and court attendances which are tedious and worrying for both patients and busy orthopaedic surgeons.

If the findings of Gargan et al (p. 523) are correct, that psychological disturbance may be established within three months, then the conclusion of the Quebec Task Force that such patients should be treated with optimistic confidence and reassurance at the earliest possible stage is confirmed and emphasised. Perhaps the ‘epidemic’ can be brought under control and the long-term problems reduced.

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REFERENCES