A prospective cohort study of the outcome of acute whiplash injury in Greece

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Received on May 20, 1999; accepted in revised form on July 28, 1999.
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Key words:
Whiplash injury, neck sprain, cervical sprain, accident, dizziness, epidemiology.

ABSTRACT
Objective
An earlier pilot study suggested that the late whiplash syndrome is uncommon in Greece. The purpose of the present study is to extend the evaluation to a larger sample, and include the prevalence of specific symptoms in the evaluation.

Methods
In a prospective, cohort study, a total of 180 accident victims were consecutively recruited following Emergency ward presentation. A standard questionnaire asked about neck pain, headache, shoulder pain, limb numbness or pain, and dizziness. Accident victims were followed for 6 months.

Results
In the initial 4 weeks after the accident, accident victims reported neck pain, headache, shoulder pain, arm numbness or pain, and dizziness, but at 4 weeks more than 90% had recovered from these, the remainder of the subjects having minor symptoms (not requiring therapy), and returning to their pre-accident state of health (which included minor symptoms). There were no cases of chronic disability.

Conclusion
In Greece, symptoms after an acute whiplash injury are self-limiting, brief, and do not appear to evolve into the so-called late whiplash syndrome.

Introduction
A previous preliminary report was presented of 130 accident victims in Greece with grade 1 or 2 whiplash-associated disorder (graded as per Quebec Task Force 1995 [1]), of whom 91% no longer reported neck pain or headache after 4 weeks, the remaining 9% having minor symptoms of a degree that did not require therapy, did not interfere with daily activity, and were typical of pre-accident symptoms (2). In order to reaffirm that the results hold with a larger sample size, an additional 50 consecutive accident victims (totalling 180) have been followed. The earlier report of 130 patients did not include data regarding the prevalence and course of a number of specific symptoms commonly reported as part of the late whiplash syndrome, including shoulder pain, limb pain or numbness, and dizziness: the current report examines more fully the clinical syndrome of whiplash injury in Greece. One would expect these symptoms, if they are related to the acute whiplash injury, to resolve as do the headache and neck pain - within weeks.

Materials and methods
During a time period of 36 months (July 1995 - July 1998) patients involved in rear, frontal, or lateral collisions in a motor vehicle accident were identified consecutively from Emergency Department presentations at the University of Patras Hospital. This hospital serves a catchment area with a population of over 1 million. Patients were excluded if they had either Quebec Task Force Grade 3 or Grade 4 whiplash-associated disorder (WAD) (i.e. evidence of cervical spine fractures, dislocations, or clear-cut, objective neurologic lesions) (1). Also excluded were those with head injury, loss of consciousness, or prior neck injury. All patients were examined within 2 days of the accident and had onset of symptoms within this period (most within 24 hours). They were then reassessed at 1, 3, and 6 months. Assessment included a recording of the details of the accident and subjective complaints (headache, neck pain, shoulder pain, arm pain or numbness, and dizziness), neurological and musculoskeletal examinations, and cervical spine x-ray (at first presentation). Questionnaires administered post-accident evaluated the presence or absence of symptoms, and the patients were asked if the accident resulted in any new symptoms or in a change in the character of any pre-accident symptoms. During the follow-up, so as not to confuse persistent symptoms with pre-accident symptoms, patients were asked if they continued to experience any new symptoms of altered character compared to their pre-accident state. Patients were permitted to use a collar and take analgesics.

Results
A total of 219 accident victims were assessed for suitability. Of these, 39 were excluded, 23 because of previous neck injury or cervical spine disorders (e.g.,
rheumatoid arthritis), and 16 because their injuries were assessed as either a Grade 3 or 4 whiplash-associated disorder (1) (i.e., cervical spine fracture, dislocation, or disc protrusion with objective neurologic deficit). This left 180 subjects for study, and we had 100% entry follow-up of these. The age and sex distribution, as well as the symptom prevalence, of this series is shown in Table I.

The impact direction was rear-end in 36.6% of the cases, lateral in 35.6%, and frontal in 27.7%. Approximately 42% of the accident victims were using seat belts at the time of the accident, and 58% were not. Furthermore, as reported by the accident victims, the spectrum of accident severity was equally distributed among minor (dents only), moderate (vehicle could still be driven), and severe damage (the vehicle could not be driven away from the scene of the accident).

All subjects reported the new onset or altered character of pre-existing neck pain after the accident, 86/180 (47.8%) having in addition new onset or an alteration of a previous headache type. In 90.6% of these subjects, this new neck pain resolved within 4 weeks after the accident. The remaining 9.4% who continued to report neck pain, described this as being minor, often requiring no therapy and not interfering with daily activities.

Other symptoms and clinical findings following the accident are noted in Table II. The prevalence of new onset and persistent symptoms in the accident victims over time is shown in Table III. At 4 weeks, new onset neck pain was still being reported by 9.4% of the accident victims. The pain severity and frequency after 4 weeks were usually rated as mild and intermittent. The 3 patients with neck pain at or beyond 3 months after the accident recalled having very similar symptoms before the accident, but per-

<table>
<thead>
<tr>
<th>Accident victims</th>
<th>Age range</th>
<th>Age (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>38 ± 11</td>
<td>14 - 74</td>
</tr>
<tr>
<td>Females</td>
<td>39 ± 12</td>
<td>16 - 73</td>
</tr>
</tbody>
</table>

Table I. Age and gender distributions of the accident victims.

<table>
<thead>
<tr>
<th>Time of assessment</th>
<th>Neck pain</th>
<th>Headache</th>
<th>Dizziness</th>
<th>Shoulder pain</th>
<th>Arm pain or numbness</th>
</tr>
</thead>
<tbody>
<tr>
<td>First 3 days</td>
<td>180 (100)</td>
<td>86 (47.8)</td>
<td>25 (13.9)</td>
<td>92 (51.1)</td>
<td>19 (10.6)</td>
</tr>
<tr>
<td>1 month</td>
<td>17 (9.4)</td>
<td>4 (2.2)</td>
<td>0</td>
<td>2 (1.1)</td>
<td>3 (1.7)</td>
</tr>
<tr>
<td>3 months</td>
<td>3 (1.7)</td>
<td>2 (1.1)</td>
<td>0</td>
<td>0</td>
<td>1 (0.55)</td>
</tr>
<tr>
<td>6 months</td>
<td>2 (1.1)</td>
<td>1 (0.55)</td>
<td>0</td>
<td>0</td>
<td>1 (0.55)</td>
</tr>
</tbody>
</table>

Table III. Prevalence of new symptoms in accident victims over time (n = 180).
there is also considerable utilisation of health care services for chronic “medical” disorders in which psychosocial factors are considered relevant (i.e., irritable bowel syndrome) (11). Yet in Greece the acute whiplash process presumably underlying grade 1 or 2 whiplash-associated disorder is benign. This study further suggests that the mere existence of insurance disability and an opportunity for litigation is - on its own - insufficient reason for an epidemic of chronic pain, as this secondary gain is available in Greece as well.

The issue thus is not only “how do Greece and Lithuania differ from societies with the late whiplash syndrome epidemic?”, but simultaneously “what do Greece and Lithuania have in common?” What do Canada, the United States, Norway etc. - countries with epidemic proportions of late whiplash syndrome - have in common that they do not share with Greece and Lithuania? It appears that the model recently set out by Ferrari and Russell addresses this complex issue (12).

They criticize the polarized manner in which others have insisted on debating the late whiplash syndrome, and emphasise the need to consider physical, psychological, and social factors in unison to resolve these issues. Reviewing their model, it is apparent that the cultural expectation of chronic pain following an acute neck sprain represents a critical factor. Without this, there is no motivation to seek extensive therapy or compensation. Ferrari and Russell then consider the importance of symptom amplification, and indicate that in order for symptom amplification to occur, not only must the patient view his/her symptoms as non-benign, but there must be an audience before which to repeatedly focus attention - the “source” of the injury responsible for the strikingly frequent chronic pain syndrome seen in, say, North America (6, 16). The other reason why the facet joint studies conducted thus far are not useful is that the researchers have not been studying whiplash patients, but rather a belief system - namely the belief that an accident some 44 years ago may be the cause of one’s neck pain today. That is, the two studies of Barnsley, Lord et al. are not verifiably studies of whiplash patients. Of the 39 patients they chose to study, for example, 3 of them had had their accident 21, 27, and 44 years earlier. Surely some other events occurring in that interval may be responsible for their neck pain. They also included 5 individuals who not were involved in a motor vehicle accident, and 2 individual who had no pain until 3...
months after the accident, after which their neck pain was labelled as “whiplash”. Clearly, studying this group of subjects tells us little about acute whiplash injury, its natural history, or its long term (if any) effects (13, 17, 18). The view that psychosocial factors are not important in the determination of whether or not chronic pain reporting ensues is obviously also erroneous. This is not surprising, as such a view arose out of research which was not actually designed to discover this effect (19, 20).

And so one is left with the need to re-evaluate the polarized approach of “physical versus psychological”, and is compelled to adopt a biopsychosocial model, one which can account for the epidemiology of whiplash (12). Such models could also explain why whiplash patients in some countries report chronic neurological and cognitive symptoms (21), as well as symptoms labeled as temporomandibular disorders (22), while in other countries, such as Greece, such phenomena are absent. Taking into consideration the above data, plus data from Lithuania to Lithuania, please.

References