INTRODUCTION

Low back pain (LBP) is a common cause of disability and functional loss in developed countries. While the life-long prevalence of LBP is approximately 70%, the annual incidence ranges from 25% to 45% (1, 2). Age, gender, lifting heavy objects, and certain jobs are the main risk factors (1–4).

Risk factors associated with LBP in the workplace have also been studied, particularly in occupations such as nursing, industrial work, police service, and fire service (3, 4). Lifting heavy objects, inappropriate lifting techniques and poor fitness levels are risk factors among nurses, whereas heavy physical activity, frequent bending and lifting, repetitive movements, being exposed to vibration, and depression are significant risk factors among industrial workers (3–11).

As physicians working in the largest clinic in Turkey that deals with the intensive rehabilitation of spinal cord injured patients, we frequently encounter problems due to LBP among professional caregivers of patients with spinal cord injury (SCI). The life expectancy of patients with SCI has increased in recent decades due to advances in medicine and rehabilitation techniques (12, 13). Together with the increasing prevalence of road traffic accidents this means that there are increasing numbers of younger patients with SCI. Improvements in post-accident survival rates and life expectancy mean that these patients are supported by a caregiver for longer, thus the health of caregivers is of great importance, particularly decreasing and controlling the frequency of LBP, and LBP has become a social burden.

To the best of our knowledge, there are no published data concerning the frequency and risk factors of LBP among caregivers of patients with SCI, or recommendations about preventive measures. The aim of the present study was to evaluate the prevalence of LBP in caregivers of patients with SCI and to determine the risk factors for LBP.

METHODS

Participants

The caregivers of 185 patients with SCI who were rehabilitated in our clinic between May 2008 and January 2010 were recruited to the study. Exclusion criteria were: under 18 years of age; previous episodes of LBP; working for less than 3 months; and family members of patients. Five caregivers were excluded due to previous episodes of LBP, and 80 because they were family members (spouses, parents, children, other relatives, etc.), in order to avoid psychological factors affecting LBP. The remaining 100 caregivers were “professional caregivers”, who were employed by the families and who had been nursing the patients since they were injured. There are no staff caregivers at our rehabilitation centre, thus families mainly support the patients themselves. However, in some circumstances they employ professional nursing support and, in Turkey, these caregivers are allowed to work at the hospitals. Thus, 100 caregivers fulfilling the inclusion criteria, and an age- and body mass index (BMI)-matched control group, comprising 87 healthy subjects, were included in the study.

The caregivers were informed about the study and invited to participate. Signed informed consent was obtained from all participants. The study was officially approved by the local ethics committee.

Study measures

Participants (caregivers and controls) completed a questionnaire. The first part of the questionnaire consisted of demographic characteristics.
The study group comprised 100 caregivers (29 males and 71 females; mean age 37.8 years (standard deviation (SD)13.5)) and the control group comprised 87 healthy subjects (26 males and 61 females; mean age 38.4 years (SD 12.7) ). There were no significant differences between the groups in terms of age, gender or BMI. The demographic characteristics of both groups are shown in Table I. The 1-year prevalence of LBP was significantly higher among caregivers compared with the control group ($p<0.001$, Table I). With respect to pain characteristics, LBP was the most common (77.6%), whereas the frequency of radicular pain spreading to the legs was lower (22.4%). When the groups were compared in terms of VAS and ODI scores, VAS scores were significantly higher among caregivers, whereas there were no significant differences between groups in terms of Oswestry scores (Table II). The spinal cord lesion was in the cervical region in 30 patients with SCI, the thoracic region in 61, and the lumbar region in 9. There were 77 patients with motor complete lesion and 23 with motor incomplete lesion. The ASIA Impairment Scale (AIS) grades of the patients are shown in Table III. There was a significant association between LBP of the caregivers and lesion level, AIS grades and duration of injury of the patients. The prevalence of LBP was higher among caregivers of those with complete lesion and with long injury duration ($p=0.04$ and $p=0.004$, respectively; Table IV). LBP was also associated with FIM scores of the patients with SCI.

The level of functional independence of patients (self-care, transfer, mobility) nursed by caregivers with LBP was signifi-
Table V. Low back pain (LBP) and Functional Independence Measure (FIM) scores

<table>
<thead>
<tr>
<th></th>
<th>Caregivers with LBP (n=58)</th>
<th>Caregivers without LBP (n=42)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIM self-care</td>
<td>Median (min–max)</td>
<td>Median (min–max)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>20 (3–40)</td>
<td>28 (6–42)</td>
<td></td>
</tr>
<tr>
<td>FIM locomotion</td>
<td>5 (2–18)</td>
<td>10 (3–21)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>FIM mobility</td>
<td>4 (0–10)</td>
<td>7 (2–21)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Caregivers with LBP (n=58) significantly lower than that of patients nursed by caregivers without LBP (p<0.001, Table V).

DISCUSSION

LBP is a common problem among healthcare workers, particularly among nurses, due to their occupations, and there have been a considerable number of studies on this subject. The one-year prevalence of LBP has been reported to be 46–77% in the studies investigating LBP among nurses (8, 19–21). The lifetime prevalence of LBP has been reported to be 48.2%, one year prevalence 31.5% and point prevalence 11.5% among industrial workers, whereas the one year prevalence of LBP was found to be 54.9% among policemen after they began working (22, 23). The most important risk factors for LBP among policemen were: using heavy equipment, driving, physical requirements of the job, poor ergonomics, and inadequate physical adaptation (3). In the present study, the one-year prevalence of LBP was significantly higher among caregivers (58%) compared with age- and BMI-matched controls (27.6%). The prevalence of LBP was also higher among caregivers of SCI patients with long duration of injury; i.e. LBP was associated with caregiving duration. This was attributed to activities that cause LBP having been carried out for a long time.

The present study showed that LBP of caregivers was associated with the severity of the patient injury. LBP was more common among caregivers of patients with motor complete lesion identified according to the AIS. The FIM levels of patients were also associated with LBP of caregivers; the FIM scores concerning self-care, transfer and locomotion of the patients nursed by caregivers with LBP were significantly lower than those of patients nursed by caregivers without LBP (p<0.001). As there are no auxiliary devices or mechanical patient lift systems in our centre for the transfer of patients with SCI, manual handling of patients is common. A high frequency of LBP among caregivers of patients with low FIM scores was thus an expected result. The use of mechanical patient lift systems is advantageous in reducing the load on the low back, and healthcare workers are recommended to use these systems (24, 25). Similar to the present study, the frequency of LBP was reported to be higher among caregivers of patients with high levels of dependence in a previous study (26). In their study, Tong et al. (4) investigated LBP among female caregivers of children with physical disabilities and compared them with caregivers of children with endocrinological problems. In that study, the prevalence of LBP was higher among the caregivers of children with physical disabilities (71.1%) compared with caregivers of children with endocrinological problems (43.5%). Moreover, Tong et al. (4) also reported that the prevalence of LBP was higher among caregivers of children with low FIM for Children (WeeFIM) scores compared with caregivers of children with high WeeFIM scores, consistent with the results of the present study.

This study also evaluated the severity of pain, using a VAS. The VAS scores were significantly higher among caregivers with LBP compared with control subjects with LBP (5.64 (1.6) vs. 3.96 (1.67); p<0.001). No significant differences in ODI scores were found between caregivers and control group (p=0.196). ODI also includes criteria such as travel and social activities. However, the effect of these criteria cannot be shown in the disability scales of caregivers of patients with SCI, although they may have pain that negatively affects their lives, because their lives do not include these activities. Based on these data, we conclude that the ODI scale is not adequate to evaluate disability due to LBP in certain groups and that there is a need for more sensitive scales for special groups to be developed.

In conclusion, LBP is a common problem among caregivers of patients with SCI, which appears to be associated with nursing duration as well as the functional independence level of the patient. LBP among caregivers is a public health problem, and subjects should be informed about this. There is a need for scales to be developed to evaluate the effect of LBP on the lives of caregivers of patients with SCI.

REFERENCES


