

The Demographic Characteristics of Patients Admitted to the Emergency due to Low Back Pain

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Abstract

Objectives: We want to examine the demographic characteristics of patients admitted to the emergency department due to waist complaints between 2007-2015 years.

Methods: Records of the patients presented to the emergency with low back pain emergency services of Abant İzzet Baysal University Medical Faculty and Public Hospitals affiliated Public Hospitals Alliance between 2007-2015 years were analyzed retrospectively. The demographic characteristics of patients and information were obtained from the records. The patients' diagnosed low back pain at the time they admitted to emergency were included in the study. The patients undergoing trauma or accident and diagnosed acute fracture were excluded from the study. The patients elaborated in terms of age, gender, admission time at which clock, day, month, year, and season, how to remain in emergency and if referred to another service, to which department was referred and how many days they admitted. If referred to one of the surgical departments, they were recorded to undergo surgery.

Results: Total number of patients diagnosed low back pain and received treatment in emergency was 43233. Of these, 22372 patients were male, 20861 patients were female. 11 patients admitted to general surgery, 14 patients to the Orthopedics and Traumatology service, 3 patients to Obstetrics and Gynecology, 1 patient to Urology, 1 patient to Thoracic Surgery, 699 patients to Neurosurgery service. 5 patients admitted to algology, 3 patients to Pediatrics, 20 patients to Infectious Disease, 89 patients to Physical Therapy, 9 patients to Internal Medicine, 5 patients to Cardiology, 11 patients to Neurology, 1 patient to Intensive Care Unit.

Conclusions: If the patient's anamnesis and physical examination is done very well, it will prevent unnecessary tests and treatments. Paradigm about diagnose and treatment strategies for the patients with low back pain that emergency doctors can follow when they encounter can be created through extensive studies.

Keywords: Low back pain, emergency department, demographic characteristics.

Received: 21.03.2015 Accepted: 30.03.2015

doi: 10.15824/actamedica.00840

Introduction

Lower back pain is a disease that results in labor loss, as well as significant health costs, and social and medical problems. It is also among the causes of emergency admissions (1). Lower back pain is seen in approximately 20-30% in the population, and individuals between the ages of 45 and 65 years are considered to have the highest risk (2).

Some studies showed that lower back pain prevalence is 15-45%, mostly affecting individuals between the ages of 35 and 55 years with no differences in gender (3,4). There are certain diseases, such as degenerative disc disease and spondylosis, whose effect on lower back pain is not fully understood. Some nonspecific factors can contribute to lower back pain in many patients, and it can be difficult for these patients to fully recover (5).

Some authors believe that approximately 85% of patients with acute lower back pain have nonspecific

etiology (6). It is claimed that many factors such as age, gender, genetic susceptibility, occupation, smoking, race, occupational satisfaction, psychological problems, anthropometric status, and posture can play a role in nonspecific lower back pain (7). Chronic back pain is often thought to be the result of mechanical causes. It is frequently believed to result from disc and/or vertebra degeneration, musculoskeletal sprain or strain, spinal position, or movement disorders. It was reported that the patients with chronic back pain had a deteriorated life quality, especially physical components; it was also closely associated with their personal characteristics such as advanced age, female gender, increased body mass index, unemployment, and poor education, as well as level of pain and clinical and functional impairment (8). Pain can result from nociceptive, neuropathic, or psychological process or their combination in these patients (9).

Table 1. Distribution of the patients by year

Years	Number of patients	
	n	%
2007	3,444	8%
2008	4,825	11.2%
2009	3,748	8.7%
2010	5,786	13.4%
2011	5,942	13.7%
2012	6,159	14.2%
2013	6,48	15%
2014	6,849	15.8%

In 2005, 2.4 million people in the United States admitted to the ER with complaints of lower back pain. In many cases, emergency service intends to provide symptomatic relief and guide patients to an appropriate department for monitoring. The method that is used for the treatment is drug treatment in emergency; the average time between triage admission and drug administration was reported as 1.5-2 hours (10). Emergency physicians refer 30-60% of patients who have acute lower back pain and who do not have a progressive neurological deficit to the relevant specialist. Approximately 40% of emergency physicians recommend patients are admitted to a physiotherapy polyclinic for acute or chronic lower back pain. For acute lower back pain, patients should be referred first to physiatrists, and then to neurologists or rheumatologists, if necessary; expert surgeons could refer patients to expensive imaging techniques or surgery. Especially patients who have acute lower back pain and sciatica are referred by emergency physicians to orthopedists or neurosurgeons. Surgery should not be considered before trying conservative treatments (11). Acute lower back pain usually tends to regress over time; however, the condition could progress to a chronic state in 2% of the patients. Informing the patient about the possibility of recurrent lower back pain could increase the patient's awareness, to organize his/her daily life, and to obtain instructive information (12). Bed rest should be rarely recommended, and patients should be encouraged to return to daily life as soon as possible (13,14). Emergency physicians usually prefer anti-inflammatory drugs for the treatment of lower back pain. A combination of muscle relaxants and analgesics have a mild effect on healing, and their use is not very safe.

The present study aimed to investigate the demographic features of patients who are admitted to the ER with back pain, and in light of these results to give recommendations on how to approach ER patients with back pain.

Table 2. Statistical data of emergency admission by month.

Years	Number of patients	
	n	%
January	3,764	8.7%
February	2,851	6.6%
March	3,128	7.2%
April	3,37	7.8%
May	3,639	8.4%
June	3,667	8.5%
July	3,702	8.6%
August	4,038	9.3%
Sept.	3,553	8.2%
October	3,947	9.1%

Materials and Methods

The medical records of patients who admitted to the emergency services of Abant İzzet Baysal University Medical Faculty Hospital and State Hospitals Union between 2007 and 2015 with lower back and lower back/back pain complaints were retrospectively evaluated. The demographic features and patient information were obtained from medical records.

At the time of admission to ER, patients with the diagnosis lower back pain were included in the study. Patients who experienced trauma or accidents, and patients with fracture diagnosis were not included in the study. Whether the pain was acute or chronic was not taken into consideration. Attempts were made to identify the primary and secondary causes of lower back pain in the ER, and patients were treated according to the cause of pain.

Patients who had reflective pain, and who required emergency intervention after investigating their etiology were hospitalized in internal services, whereas patients who required emergency surgery were hospitalized in surgery services. Age, gender, pain localization, time of admission (hour, day, month, year, and season), length of ER stay, referral to another service, and length of stay in the service (if present) were examined. If patients were transferred to a surgical service, whether surgery was performed or not was recorded.

Demographic data of the patients was defined as average, standard deviation and percentage.

Results

A total of 703,491 patients admitted to the ER between 2007 and 2015, and 43,233 patients admitted with back pain and received treatment. Among this group, 51.7% were male (22,372), and

48.3% were female (20,861). When we classified the patients with respect to age groups, 2,944 patients (6.8%) were between 0 and 20 years, 20,218 patients (46.8%) were between 21 and 40 years, 14,132 patients (32.7%) between 41 and 60 years, and 5,939 patients (13.7%) were 61 years or older. When we classified patients as young and adult with respect to the cut-off age of 45, 27,871 patients (64.5%) were younger than 45, and 35.5% of the patients were older than 45. Among all patients, 42,938 patients (99.3%) were diagnosed with lower back pain, 295 patients (0.7%) were diagnosed with lower back pain and back pain.

Tables 1 and 2 show the number of admissions with respect to months and years. Among all patients, 14,177 patients (32.8%) admitted within the first ten days of the month, 14,023 patients (32.4%) admitted in the second ten days of the month, and 15,033 patients (34.8%) admitted in the last ten days of the month. When we examined admissions with respect to seasons, 10,304 patients (23.8%) admitted in the winter, 10,137 patients (23.4%) admitted in the spring, 11,407 patients (26.4%) admitted in the summer, and 11,385 patients (26.3%) admitted in the fall. When we evaluated the time of admission with respect to 24 hours, 3,552 patients (8.2%) admitted between 24:00-8:00, 20,698 patients (47.9%) admitted between 8:00-16:00, and 18,974 patients (43.9%) admitted between 16:00-24:00.

Table 3. Number of patients who required monitoring in emergency services, and were admitted to other clinics.

Variables	Number of patients (%)	Average number of days in emergency
Patients required monitoring for a couple of hours	42,346 (97.9)	
Patients required monitoring for 24 hours in emergency services	46 (0.001%)	1 day
Patients admitted to an internal service	54 (0.0012%)	6 days
Patients admitted to a surgical service	698 (0.016%)	4 days
Patients admitted to the physical therapy clinic	89 (0.002%)	13 days

Eleven patients were hospitalized in general surgery services, and one patient underwent surgery. Fourteen patients were hospitalized in orthopedics and traumatology service, and six patients underwent surgery. Three patients were hospitalized in the gynecology and obstetrics service, and one patient underwent surgery. One patient was hospitalized in the urology service and underwent surgery. One patient was hospitalized in the thoracic surgery service, and was monitored for three days without undergoing surgery. Six hundred sixty-eight patients were hospitalized in the neurosurgery service and 448 patients underwent surgery. Five patients were hospitalized in the algology service, three patients were hospitalized in the pediatric diseases service, 20 patients were hospitalized in infectious diseases service, 89 patients were hospitalized in the physiotherapy and rehabilitation service, nine patients were hospitalized in the internal medicine service, five patients were hospitalized in the cardiology service, 11 patients were hospitalized in the neurology service, and one patient was hospitalized in the intensive care service. The overall rate of hospitalization was approximately 0.019%.

Follow-up data of patients admitted to emergency are presented in Table 3.

Discussion

Emergency services are service areas where patients are treated for a maximum period of 48 hours, or transferred to suitable services. The existing data on the number and features of patients who are admitted to the ER with back pain is limited. Back pain has a high prevalence and incidence in the general population. Treatment and prognosis for this condition have been demonstrated comprehensively. In the case of our patients, 0.061% of the patients admitted to the ER with back pain. In this group, 0.019% of the patients were hospitalized, and 97.9% of the patients were treated as an outpatient in the ER, and then discharged.

The medical history and physical examination are crucial to exclude severe pathologies, and to determine the diagnosis. Several guide studies have described that back pain should be investigated under three different groups: Group 1, patients with severe spinal pathologies; Group 2, patients with nerve root pressure or radicular pain; Group 3, patients with nonspecific back pain (15). This is particularly important to determine the treatment strategies for patients who are admitted to the ER with lower back pain, and to refer them to the relevant service.

Patients with lower back pain have high expectations when they are admitted to the ER for the examination of the pain and treatment; on the other hand, it is considerably challenging to treat such patients in ER conditions (11). During ER conditions, the aim of lower back pain treatment is to diagnose severe diseases, to reduce pain, to provide the relevant recommendations and follow up, and to carry out further research (if necessary). The definitive etiology is determined in the ER in only 15% of the patients; however, this should not be an obstacle against the initiation of treatment. Different studies have suggested that 95% of the patients who are admitted to primary care physicians with lower back pain have nonspecific lower back pain (16,17).

During anamnesis, the following parameters should be questioned: localization of pain, severity and distribution of pain, onset, intensity, frequency, duration, presence of sciatica, and daily life factors that increase and decrease pain (14). A full neurological examination should be done during the physical examination, and special tests should be evaluated as well. It could be possible to exclude differential diagnoses.

It has been reported that acute back pain and disability are alleviated within one month, and recurrence is seen at least once within the year following the acute episode (18). Following its attack, acute lower back pain does not have a high tendency to progress to a chronic state. In case of chronic lower back pain development, biopsychosocial factors are risk markers that should be evaluated during the onset of patients with lower back pain (19). In our study, we could not determine how many times a patient was admitted to the hospital with complaints of back pain.

In the United States, it is estimated that the annual incidence of patients who are admitted to the ER with back pain is 1.39/1,000. According to a multicenter, five-year retrospective study in the United States, 1.82 million patients admitted to the ER with lower back pain. This number corresponds to approximately 3.15% of all patients in the ER. In this study, back pain showed a bimodal distribution with respect to age (25-29 and 95-99). Among all patients, 51.5% were male, and 48.5% of the patients were female. Only 1.22% of the patients required follow-up or hospitalization, and 98.42% of the patients were treated as outpatients and discharged (20). The female/male ratio in our study was the same with this study. In our study, the rate of hospitalization was lower (0.019%).

Previous studies have suggested that impediments against determining lower back pain in the general

population include the difficulty to define individuals at risk, and carrying out studies in small study groups. These studies could indicate the disproportional exposure to risky activities in young males, the ratio of increased compression fractures, osteoporosis, and age-related diseases, and incidence of secondary lower back pain in older patients (21-25). The rate of hospitalization is higher for older patients with lower back pain. The majority of the epidemiological studies have found that the middle-age group has the highest rate of lower back pain (22,26,27). Knox et al. found that patients >35 years are in risk, whereas Lebouf-Yde found that patients between 20-41 years are at risk (22,27). The number of epidemiological studies on older patients is limited. Some studies have reported that the prevalence ranges between 6-47% in older patients (25). In their study, Chenot and Brian found a similar rate for the hospitalization of female patients with lower back pain (61.1%). Contrary to other studies, the authors have identified that female patients experience more intense pain compared to male patients (28,29). The mean age of outpatients was 39.1 years, whereas the mean age of inpatients was 61.8 years. In the current study, the incidence of patients between 0-20 years was 6.8%, the incidence of patients between 21-40 years was 46.8%, the incidence of patients between 41-60 years was 32.7%, and the incidence of patients over 61 years was 13.7%. Considering a cut-off age value of 45, 64.5% of the patients were younger than 45 years, and 35.5% of the patients were older than 45 years.

One study demonstrated that following the initial evaluation of all patients who admitted to the ER during a one year period, 4.1% of the patients are hospitalized in various clinics. The results indicate that the highest number of admissions is in December, and the lowest number of admission is in April. In addition, the total number of patients/month and the average number of patients/month are different. Evaluation with respect to seasons showed that the number of admissions increased when approaching winter, and decreased when approaching summer. The highest number of admissions were in the fall, and the lowest number of admissions were in the spring.

When evaluations were made according to three eight-hour periods, the lowest number of admissions were between midnight and 8:00 am, and the highest number of admissions were during working hours. The number of admissions during the last period of the day was similar to the number of admissions during working hours. Among all patients, 42.3% were hospitalized in internal services, and 47.5% were hospitalized in surgery services. On the other hand,

the incidence of patients who were hospitalized in physiotherapy services was approximately 1/15,000 (30). In the current study, we did not find any significant difference in the number of admissions between the three ten-day periods in a month. In addition, we did not determine any significant difference between the numbers of admissions with respect to seasons. The highest numbers of admission were in August, October, and November; on the other hand, the lowest numbers of admissions were in February and March.

Cordell et al. carried out a retrospective study on all patients who admitted to the ER for seven days, and found that 61.2% of the patients admitted with back pain. According to their results, the incidence of neck pain was 4.8%; the incidence of chest pain and thoracic pain was 18.4%; the incidence of lower back pain, sacrum pain, and coccyx pain was 13.2%. The mean age was 30, and 54.9% of the patients were female (31). According to the study by Jonston et al., among all patients who admitted to the ER and who were older than 4 years, 71% of the patients were adults, and 31% of the patients were children. According to their results, two-thirds of the patients complained of pain at admission. The authors also found that most of the patients had more pain at the time of discharge, compared to their admission (32). According to another study, 50% of 871 patients who admitted to the ER during the summer had acute pain, whereas 2% of the patients had chronic pain. Among all patients, 23% of the patients received analgesics, and more than one-third of the patients continued to experience pain at the time of discharge from ER and during the one-week follow up period. The group with highest level of pain consisted of female patients who had muscle-skeletal diseases for more than one week (33). Tanabe et al. reported that 78% of the patients admitted to the ER had complaints of pain. The authors have stated that the most common form is chest pain, and the patients could recover with medical treatment. Their findings have demonstrated that emergency physicians should be experienced in terms of pain treatment (34).

Knox et al. examined patients older than 8 years who admitted to 20 ERs in the United States and Canada with moderate/severe pain. The authors found that 56% of the patients were female, and the mean age was 34.5 years. In addition, 10% of the patients admitted with back or neck pain (35).

Civaner et al. carried out a study on patients admitted to the ERs of state hospitals, and found that only 52.3% of the patients actually required emergency service. Classification according to diagnosis showed

that the refilling prescription was the first reason (14.1%). Gursoy et al. found that the incidence of outpatients among all patients who admitted to an ER of a university hospital was 80.8%. Atabek et al. reported that 52% of all pediatric patients who admitted to ER actually required emergency service; 11% of these patients were brought to the ER with suspected emergency, and 37% of these patients did not require emergency services (36-38). Edirne et al. examined 190 patients through systematic sampling of all patients who admitted for a period of one month. Among all patients, 43.2% were male, and 56.8% were female. Among all patients, 35.5% were pediatric patients, and 60.5% were adult patients. The mean age was 30.4 years (overall); the mean age of pediatric patients was 7.4 years, and the mean age of adult patients was 45.3 years. Among all patients who admitted to the ER, 19.5% of the patients were treated as outpatients, and 40% of the patients were hospitalized. Following observation period, 38.9% of the patients were treated as outpatients, and 1.6% of the patients were referred to other services. Among all patients, 2.6% of the patients admitted to the ER with lower back pain, and in this sample population, the number of pediatric patients with lower back pain was zero (39).

In the current study, we could not obtain patient-specific information. We had no information on variables such as comorbid diseases, previous diseases, medications, working conditions, smoking, or family history, and we were unable to evaluate these variables with respect to risk of back pain. No distinction was made between acute and chronic lower back pain, and there was no information on diagnosis and treatment. The etiology and treatment of reflective pain that could lead to lower back pain was only investigated in case of patients who were hospitalized in other emergency services. Retrospective studies are unable to determine the pain intensity, response to treatment, inaccurate diagnosis, and clinically significant pain.

It is possible to design studies about how emergency physicians would evaluate and treat patients admitted with lower back pain. Excellent anamnesis and physical examination would prevent unnecessary examinations and treatments. Comprehensive studies in the future would allow the establishment of a paradigm that could be followed by emergency physicians to determine the diagnosis and treatment strategy for patients with back pain.

Conclusion

It is possible to design studies about how emergency physicians would evaluate and treat patients admitted with lower back pain. Excellent anamnesis and physical examination would prevent unnecessary examinations and treatments. Comprehensive studies in the future would allow the establishment of a paradigm that could be followed by emergency physicians to determine the diagnosis and treatment strategy for patients with back pain.

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