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Yeşim GÖKÇE KUTSAL[1]
Sibel EYİGÖR[2]
Asuman DOĞAN[3]
Sasan ZARDOUST[1]
Bekir DURMUŞ[4]
Deniz EVCİK[5]
Rezzan GÜNAYDIN[6]
Nilay ŞAHİN[7]
Ali AYDENİZ[8]
Pınar ÖZTOP[9]
Kutay O. GÖKKAYA[3]
Sami HİZMETLİ[10]
Pınar BORMAN[1]
Nurdan PAKER[11]
Gülseren DEMİR[12]
Gülseren KAYALAR[12]
Ezgi AYDIN[2]
Özden ÖZYEMİŞCİ[13]

Correspondance

Sibel EYİGÖR
Ege University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, İZMİR

Phone: 0232 390 36 87
e-mail: eyigor@hotmail.com

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[1] Hacettepe University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, ANKARA
[2] Ege University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, İZMİR
[3] Ankara Physical Therapy and Rehabilitation Hospital, Department of Physical Therapy and Rehabilitation, ANKARA
[4] Erenköy Education and Research Hospital, Department of Physical Therapy and Rehabilitation, İSTANBUL
[5] Ankara University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, ANKARA
[6] Ordu University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, ORDU
[7] Balıkesir University, Faculty of Medicine, Physical Therapy and Rehabilitation Dept, BALIKESİR
[8] Gaziantep University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, GAZİANTEP
[9] Baskent University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, İSTANBUL
[10] Cumhuriyet University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, SİVAS
[11] Istanbul Physical Therapy and Rehabilitation Hospital, Department of Physical Therapy and Rehabilitation, İSTANBUL
[12] Ankara Education and Research Hospital, Department of Physical Therapy and Rehabilitation, ANKARA
[13] Gazi University, Faculty of Medicine, Department of Physical Therapy and Rehabilitation, ANKARA

RESEARCH

NEUROPATHIC PAIN IN ELDERLY: A MULTICENTER STUDY

ABSTRACT

Introduction: Aging brings with it an increase in the prevalence of pain. For effective pain treatment, it is important to determine pain prevalence, its nature, and the factors affecting it. However, epidemiologic information on neuropathic pain in the elderly is inadequate. In our cross-sectional multicenter study, we aimed to determining the prevalence of neuropathic pain in elderly patients and the relationship of neuropathic pain with socio-demographic and clinical factors.

Materials and Method: Thirteen centers in different regions of Turkey. The study included 1163 individuals over age 65. Physicians conducted face-to-face interviews to obtain clinical and socio-demographic data and The Douleur Neuropathic 4 (DN4) and The Self-completed Leeds Assessment of Neuropathic Symptoms and Signs (S-LANSS) pain scales were used to assess neuropathic pain. Patients who scored ≥4 or ≥12 on the DN4 and S-LANSS scales, respectively, were determined to be experiencing neuropathic pain.

Results: Neuropathic pain was found in 52.5% of the patients (n=610) in this study. Approximately 67.5% of the patients with neuropathic pain were in the 65-74 age group, and 72.1% (n=440) were females. Of the patients who were experiencing neuropathic pain, 48.4% were graduates of primary school, 91.6% engaged in very little or no physical activity, and 56.7% were taking four or more medications.

Conclusions: Neuropathic pain prevalence was 52.5% in the elderly over age 65 who had presented with pain complaints. Neuropathic pain was more frequently seen in women, patients with comorbidities, those with poor levels of ambulation, those using walking aids, and those using multiple drugs. Interrogating the elderly for neuropathic pain seems important for effective treatment.

Key Words: Aged; Chronic Pain; Neuralgia.

ARAŞTIRMA

YAŞLILARDA NÖROPATİK AĞRI: ÇOK MERKEZLİ ÇALIŞMA

ÖZ

Giriş: Yaşlanma ile birlikte ağrı sıklığında artış olmaktadır. Etkin ağrı tedavisi için ağrı sıklığı ve etkileyen faktörleri belirlemek önemlidir. Ancak yaşlılarda nöropatik ağrının epidemiyolojik verisi ile ilgili bilgiler yetersizdir. Çalışmamızda amaç; yaşlı hastalarda nöropatik ağrı sıklığı, nöropatik ağrının sosyodemografik ve klinik özellikler ile ilişkisini belirlemektir.

Gereç ve Yöntem: Çalışmaya Türkiye'nin farklı bölgelerinden, 13 merkez fizik tedavi ve rehabilitasyon polikliniklerine ağrı şikayeti ile başvuran 65 yaş üstü 1163 hasta alındı. Klinik ve sosyodemografik veriler yüzyüze sorgulama yöntemi ile elde edildi. Hastalarda nöropatik ağrıyı değerlendirmek için DN 4 ve S-LANSS ağrı ölçeği kullanıldı. DN4 ≥4 veya S-LANSS ağrı ölçeği ≥12 üzerinde olanlarda nöropatik ağrı olduğu kabul edildi.

Bulgular: Çalışmaya dahil edilenlerin %52,5'inde (n=610) nöropatik ağrı saptandı. Hastaların %67,5'si 65-74 yaş aralığında ve %72,1'i (n=440) kadındı. Nöropatik ağrısı olanların; %48,4'ü ilköğretim mezunu, %91,6'sının fiziksel aktivitesi hiç yok ya da çok düşüktü, %56,7'si 4 ve üzeri ilaç kullanıyor olarak bulundu.

Sonuç: Ağrı şikayeti olan 65 yaş üzeri yaşlılarda nöropatik ağrı sıklığı %52,5 olarak saptandı. Kadınlarda, komorbiditesi olanlarda ,ambulasyon düzeyi kötü olanlarda, yürümede yardımcı cihaz kullananlarda ve çoklu ilaç kullananlarda nöropatik ağrı daha sık görülmekte olup yaşlıların nöropatik ağrı açısından sorgulanması etkin tedavi açısından önem taşımaktadır.

Anahtar Sözcükler: Yaşlı; Kronik ağrı; Nöropatik ağrı

INTRODUCTION

The prevalence of pain increases with aging (1,2). Chronic pain can be nociceptive, neuropathic, or mixed (3). The increased prevalence of pain in the elderly may be associated with age related factors, physiological changes and disorders in bones and muscles or comorbid diseases and conditions, such as diabetes, cancer, stroke, and surgery (4,5). These conditions, which cause neuropathic pain (NP), are more common in older people (6). NP in the older population is important because it restricts functional activities, decreases activities of daily living, and can eventually lead to disability (7-9). Ability to cope with pain in elderly patients requires identifying the types and causes of pain and its prevalence. NP prevalence is 0.9%–17.9% in the general population and 8%–9% in the elderly (3,4,10). Large studies of people with chronic pain from any cause found the prevalence of NP to be 8.2% among UK family practice patients and 6.9% in a national population-based cohort in France (4,5). Bouhassira et al. reported NP characteristics in 21.7% of their large sample who had chronic pain (5). However, data on actual NP prevalence remain inadequate and variable, respectively, owing to lack of agreement on standard, valid criteria for assessing NP (6). Additionally, data on the prevalence of NP in older populations, which tend to have cognitive and communication problems, are also limited and show variations. It is for this reason, we believe that NP prevalence is underestimated and that higher rates of prevalence exist among the elderly.

Here we aimed to determine NP prevalence in elderly patients and its relationship with socio-demographic and clinical factors.

MATERIALS AND METHOD

Study Population

The present study was designed as a cross-sectional, multicenter study. Included were patients who had presented with pain complaints to Physical Medicine and Rehabilitation outpatient clinics at 13 centers in 8 cities located in various regions of Turkey. Subjects were patients ≥65 years of age who had applied to the outpatient clinics of the study centers and provided participation consent. Inclusion criteria included having had pain for at least 3 months and severity of pain denoted as ≥4 on the visual analogue scale (VAS). Exclusion criteria included having had no pain in the last week and severe depression, delirium, dementia, or cognitive dysfunction. The study was organized by the Turkish Society of Physical Medicine and Rehabilitation, Geriatric Rehabilitation Research Group. Local ethics committees were informed that ethics committee approval had been obtained from a single site in the name of all 13 centers in this multicenter study. All patients who voluntarily chose to participate in the study signed informed consent forms. All procedures were conducted in compliance with good clinical practices.

Outcomes

Physicians conducted face-to-face interviews to obtain clinical and socio-demographic data. Demographic data and socioeconomic information based on occupation, education level, annual income, geographical and domestic living space, and marital status were recorded. Medical histories, including comorbid diseases, polypharmacy, and smoking habits were reviewed. Fatigue, sleep disorder, and falling history during the last year were specifically noted and recorded. Questions were asked to obtain patient activity levels and ambulation needs. Activity levels were grouped as sedentary, walking for fun, regular exercise (3 h/week), and athletic (>4 h/week). The Holden Functional Ambulation Scale was used to evaluate independency of patients for ambulation. Patients were categorized on the basis of basic motor skills necessary for functional ambulation without assessing the factor of endurance. Categorization begins with "category 1" where a "nonfunctional ambulatory patient" requires more than one person for supervision or for physical assistance and goes up to "category 6"where an "ambulatory patient" is able to ambulate independently on non-level and level surfaces, stairs, and inclines (11). The health perceptions of the elderly was assessed as very poor, poor, moderate, well, and very well.

Neuropathic Pain

Intensity of pain was assessed with the visual analog scale. The severity of initial pain was estimated using a 10-point VAS, which rates severity of pain from 0 (no pain) to 10 (worst pain you can imagine). For VAS assessment, a 10-cm long horizontal scale was used. Patients were asked to mark their severity of pain at a point along this line where they considered appropriate and these values were recorded in the questionnaire.

The Douleur Neuropathic 4 (DN4) Test and S-LANSS pain scales were used to assess NP. Patients who scored ≥4 on the DN4 scale or ≥12 on the S-LANSS scale were determined to be experiencing NP.

The DN4 Test, which was developed to assess NP, consists of a total of 10 binary response items grouped into four sections. Section one consists of three items related to the type

of pain (burning, painful cold, and electric shock); Section 2 consists of four items related to the association of pain with abnormal sensations (*i.e.,* tingling, pins-and-needles sensation, numbness, and itching). Sections 3 and 4 (three items each) are related to clinical signs in the painful area (*i.e.,* touch hypoesthesia, pinprick hypoesthesia, tactile allodynia, or brushing). For each positive (yes) item, the score is 1. The total score is calculated as the sum of the 10 items, and the cut-off value for the diagnosis of NP is a total score of ≥4 out of 10 (12,13).

The Self-completed Leeds Assessment of Neuropathic Symptoms and Signs pain scale (S-LANSS) has been validated to identify pain of predominantly neuropathic origin in patients with chronic pain of any cause (14,15). The S-LANSS was selected over other NP questionnaires because it has been validated in people with mixed neuropathic and nociceptive pain, it does not have a physical exam component, and it is the most widely used measure (14). The S-LANSS consists of 7 items, termed dysesthesia, autonomic, evoked, paroxysmal, thermal, allodynia, and tender/numb (15). Participants fillled out questionnaires regarding whether they had felt the symptoms of any of the 7 items over the last week. Each item was assigned a score of 1–5, and the total score could be 0–24. The higher scores suggest that the pain is predominantly neuropathic not nociceptive. Turkish versions of the forms, which were tested for validity in Turkish, were used to assess NP (16,17). Doctors helped illiterate patients to fill in the questionnaires.

Statistical Analyses

Statistical analyses were conducted using the SPSS 11.5 software package program. P <0.05 was considered statistically significant. Data were described with percentage values, standard deviation, means, and medians (minimum–maximum). Differences between groups with and without NP were evaluated using the Mann–Whitney U test (annual income, number of drugs used, number of comorbidities, perceived health, and VAS), student's t-test (height, weight, and body mass index), and Chi-Square test (NP risk factors). After comparing risk factors, we sent the factors with P values < 0.10 to the logistic model, which was created by using the Backward LR method. Factors used to create the model included sex, education, marital status (married, widowed, or single), smoking, ambulation status, presence of comorbidity, history of falling, four or more drugs use, depression, attention deficit, insomnia, lack of energy, anxiety, and loss of appetite. Odds ratio (OR) and confidence interval (CI) were calculated.

RESULTS

Study Sample

We received a total of 1173 patient questionnaires from the 13 centers. Of the 1173 questionnaires, 10 were excluded, some for missing parts and others for failure to meet inclusion criteria, leaving a total of 1163 patients. We observed that 52.5% of the 1163 patients (n=610) had NP. The ages of 67.5% of patients with NP (n=412) were between 65 and 74 years; the ages of 28.9% of patients (n=176) were between 75 and 84 years, and the ages of 3.6% of patients (n=22) were over 85years. Of the 610 patients with NP, 72.1% (n=440) were women. Socio-demographic and clinical characteristics of the patients are shown in Tables 1-2. There are comparison of risk factors and complaints accompanying with and without neuropathic pain in Table 1. Complaints accompanying NP included fatigue for 75.1% (n=459) of patients, insomnia for 63.6% (n=388) of patients, anxiety for 44.8% (n=273) of patients, and loss of appetite for 27.2% (n=166) of patients. A history of falling in the last year was reported by 31.1% (n=190) of patients (Table 1). Holden Ambulation Scale, activity level and severe pain region of the patients with and without neuropathic pain are shown in Table 3. Regions where the pain was most intense were the low back (23.8%), foot–ankle (19.5%), and knee (19%). Although hand pain came 4th in line (n:63), 91.3 % of pain was found to be neuropatic character.

Comorbidities and distribution of neuropathic pain by disease type are shown in Table 4. The top comorbidities were osteoarthritis for 41.6% (n=254) of patients, low back pain for 35.2% (n=215) of patients, osteoporosis for 29.0% (n=177) of patients, diabetes for 29.8% (n=182) of patients, and entrapment neuropathy for 10.7% (n=65) of patients. When they were compared with respect to comorbidities, a statistically significant difference was found between in cerebrovascular event, entrapment neuropathy, plexus neuropathy, low back pain, depression, diabetes and osteoporosis (Table 4).

Neuropathic Pain

When patients with and without NP were compared with respect to all variables, a statistically significant difference was found between the groups in terms of sex, marital status, four or more drugs use, presence of comorbidity, use of walking aid, fatigue, lack of energy, loss of appetite, insomnia, Holden ambulation score, perceived health, region of most severe pain, and VAS (p <0.05). No statistically significant dif-

Table 1— Comparison of Risk Factors and Complaints Accompanying With and Without Neuropathic Pain

	NP (+)		NP (–)		*p*
	n	%	n	%	
Sex					
Female	440	67.7	210	32.3	0.004
Male	170	58	123	42	
Education					
Literate	179	68.1	84	31.9	0.061
Primary–Secondary	295	63.7	168	36.3	
High School	104	67.5	50	32.5	
University	32	50.8	31	49.2	
Marital Status					
Married	386	62.2	235	37.8	0.024
Widowed/Single	224	69.6	98	30.4	
Smoking					
Yes	43	54.4	36	45.6	0.071
No	458	66.6	230	33.4	
Gave up	109	61.9	67	38.1	
More than four drugs					
Yes	346	72.5	131	27.5	0.000
No	264	56.7	202	43.3	
Comorbidity					
Yes	584	66.6	293	33.4	0.000
No	26	39.4	40	60.6	
Falling					
Yes	190	69.1	85	30.9	0.069
No	420	62.9	248	37.1	
Insomnia					
Yes	388	68.1	182	31.9	0.008
No	222	59.7	150	40.3	
Loss of appetite					
Yes	166	70.3	70	29.7	0.036
No	444	62.8	263	37.2	
Anxiety					
Yes	273	73	101	27.0	0.000
No	337	59.2	232	40.8	
Attention deficit					
Yes	270	70.9	111	29.1	0.001
No	340	60.5	222	39.5	
Fatigue					
Yes	459	66.7	229	33.3	0.032
No	151	59.2	104	40.8	
Lack of energy					
Yes	425	68.8	193	31.2	0.000
No	185	56.9	140	43.1	

NP: Neuropathic Pain

Table 2— Patient Characteristics

	NP (+)		NP (–)		
	Mean ± sd	**Median (Min–Max)**	**Mean ± sd**	**Median (Min–Max)**	**p***
Annual income TL / year	7.789 ± 5.933	6.000 (600–33.120)	7.410 ± 4.581	6.000 (720–39.580)	0.758
Drug number	4.44 ± 2.18	4 (1–12)	3.87 ± 2.36	4 (1–15)	**0.000**
Number of comorbidities	3.92 ± 2.11	4 (1–16)	2.88 ± 1.46	3 (1–8)	**0.000**
Height	162.13 ± 7.90	160 (130–193)	162.53 ± 8.47	160 (138–190)	0.475
Weight	73.86 ± 11.17	75 (27–110)	73.54 ± 12.34	73 (7–115)	0.698
BMI	28.49 ± 4.78	28 (18–42)	27.76 ± 4.40	28 (18–46)	1.000
Health Perception	3 ± 0.86	3 (1–5)	3.39 ± 0.73	3 (1–5)	**0.000**
VAS	6.82 ± 1.60	7 (1–10)	6.20 ± 1.89	6 (1–10)	**0.000**

SD: Standard deviation, NP: Neuropathic Pain, BMI: Body mass index, VAS: Visual analog scale

Table 3— Comparison of Patients with and without Neuropathic Pain in terms of Ambulation, Using Walking Aid and Pain Site

	NP (+)		NP (–)		*p*
	n	**%**	**n**	**%**	
Holden Ambulation Scale					
Nonfunctional	14	63.9	8	36.4	**0.002**
More than one support	19	79.2	5	20.8	
One manual contact	18	75.0	6	25.0	
Smooth surface support	123	75.9	39	24.1	
Support at staircase	91	68.4	42	31.6	
Fully independent	345	59.7	233	40.3	
Activity					
Sedentary	328	65.2	175	34.8	0.553
Leisurely walk	230	65.2	123	34.8	
Regular sports	51	59.3	35	40.7	
Athletic	-	-	-	-	
Walking aid					
Walker	23	76.7	7	23.3	**0.000**
Walking stick	187	74.8	63	25.2	
Wheelchair	22	62.9	13	37.1	
None	378	60.2	250	39.8	
Severe pain region					
Neck	36	54.5	30	45.5	**0.000**
Shoulder	43	51.8	40	48.2	
Elbow	12	54.5	10	45.5	
Hand	63	91.3	6	8.7	
Back	13	56.5	10	43.5	
Low back	145	66.2	74	33.8	
Hip	23	53.5	20	46.5	
Knee	116	53.5	101	46.5	
Foot-ankle	119	84.4	22	15.6	
Chest	-	-	1	100.0	
Other	40	67.8	19	32.2	

NP: Neuropathic Pain

Table 4— Comorbidities and Distribution of Neuropathic Pain by Disease Type

	NP (+)		NP (–)		*p*
	n	%	n	%	
Parkinsonism					
Yes	14	73.7	5	26.3	0.407
No	596	64.5	328	35.5	
Cerebrovascular event					
Yes	49	79.0	13	21.0	**0.014**
No	561	63.7	320	36.3	
Multiple sclerosis					
Yes	3	100.0	-	-	0.200
No	607	64.6	333	35.4	
Alzheimer's disease					
Yes	15	83.3	3	16.7	0.095
No	595	64.3	330	35.7	
Neurogenic claudication					
Yes	27	79.4	7	20.6	0.067
No	583	64.1	326	35.9	
Phantom pain					
Yes	1	50.0	1	50.0	1.000
No	609	64.7	332	35.3	
Trigeminal neuralgia					
Yes	1	100.0	-	-	1.00
No	608	64.6	333	35.4	
Entrapment neuropathy					
Yes	65	90.3	7	9.7	**0.000**
No	545	62.6	326	37.4	
Plexus neuropathy					
Yes	12	92.3	1	7.7	**0.036**
No	598	64.3	332	35.7	
Post herpetic neuralgia					
Yes	3	75.0	1	25.0	1.00
No	607	64.6	332	35.4	
Spinal cord injury					
Yes	5	71.4	2	28.6	1.00
No	605	64.6	331	35.4	
Osteoarthritis					
Yes	254	64.5	140	35.5	0.945
No	356	64.8	193	35.2	
Low back pain					
Yes	215	73.6	77	26.4	**0.000**
No	395	60.7	256	39.3	
Depression					
Yes	57	77.0	17	23.0	**0.021**
No	553	63.6	316	36.4	
Fibromyalgia					
Yes	19	67.9	9	32.1	0,722
No	591	64.6	324	35.4	
Diabetes					
Yes	182	85.8	30	14.2	**0.000**
No	428	58.5	303	41.5	
Osteoporosis					
Yes	177	72.7	68	27.8	**0.004**
No	433	62.0	265	38.0	

NP: Neuropathic Pain

ference was observed between the groups in terms of education, smoking, annual income, activity level and history of falling ($p>0.05$). When they were compared with respect to comorbidities, a statistically significant difference was found between the groups ($p<0.05$) (Tables 1-4).

Multivariable Modeling

When a logistic regression model was formed using the backward LR method for the variables of sex, education, marital status (married, widowed, or single), smoking, ambulation status, presence of comorbidity, history of falling, use of 4or more drugs, depression, attention deficit, insomnia, lack of energy, anxiety, and loss of appetite, NP was found to be 2.05 times higher in patients with comorbidities (95% CI 1.2–3.5), 1.6 times higher in patients with anxiety (95% CI 1.2–2.2), and 1.7 times higher in patients who took four and more drugs (95% CI 1.3–2.3) ($p<0.05$).

Discussion

Here the prevalence of NP in patients who presented to the hospital with pain was 52.5%. When the groups were compared on the basis of the presence of NP, a statistically significant difference was found between the groups in terms of sex, marital status, four or more drugs use, presence of comorbidity, use of walking aid, fatigue, lack of energy, loss of appetite, insomnia, Holden ambulation score, perceived health, region of most severe pain, and VAS. NP was 2.05 times higher in patients with comorbidities, 1.6 times more in patients with anxiety, and 1.7 times higher in patients who took 4 and more drugs.

NP prevalence in the community according to self-administered questionnaires varies between 3% and 8% (4,5,10), The NP prevalence was reported to be 17.9% in the general Canadian population (18). Large studies of people with chronic pain from any cause found the prevalence of NP to be 8.2% among UK family practice patients and 6.9% in a national population-based cohort in France (4,5,10). But the prevalence appears to be considerably higher in populations with chronic pain. Bouhassira et al. reported that 21.7% of the large number of patients in his study who had chronic pain had neuropathic characteristics (5). Freynhagen et al. found that among patients with chronic low back pain, 37% had symptoms indicating NP (19). Amris et al. found that 75% of patients with chronic widespread musculoskeletal pain had somatosensory symptoms indicating NP (20). The reason for the high prevalence of neuropathic pain in our study may be because only those patients who presented with pain to the physical therapy and rehabilitation department outpatient clinics were assessed. Face-to-face interviews were also important for objectivity reasons. Furthermore, patients with mixed-type NP may have influenced this rate. However, commenting on mixed-type NP based on data in the literature and the results of the present study can be quite difficult. Moreover, potential explanation for the variability in NP prevalence estimates across studies include (1) differential recruitment practices (estimates based on patients recruited from specialists' offices have been consistently higher than those from community-based studies), (2) variable exclusion criteria or statistical control for other potential sources of NP, and (3) use of different NP measures (14,21). We should also reiterate that the questionnaires used in the present study have not been tested for validity and reliability in the elderly population. The diagnosis of NP remains a challenge, and one way to detect it is to use a series of specific descriptors that have been used to prepare different scales and questionnaires. According to one expert panel, the main clinical strength of questionnaires as screening tool lies in their ability to identify patients with possible neuropathic pain, but they cannot replace clinical judgment (3). Clinical judgment has been considered a valid standard in testing the diagnostic accuracy of questionnaires for NP (13,22).

In the literature, older age, being female, low education level, and poor economic status seem to be associated with pain and neuropathic pain (4,6,23). We also found an association between female sex and neuropathic pain. Although the percentage of NP appears higher in the 65–74 age group than in the other two age groups, no statistical significance could be established. There was also a higher prevalence of chronic pain with neuropathic characteristics in patients from the 50–64 age group in a study (5). The relationship between older age and NP as described in the literature was not observed in our study. The fact that we included patients >65 years and that we assessed them by grouping according to age may have produced this result. We feel certain that the results of the present study will become clearer after further similar studies are conducted with larger numbers of patients. No differences were noted between the two groups in height, weight, and body mass index, which agrees with other studies (17, 24). The existence of an NP component is associated with a higher level of education (24). This could be interpreted as a sign that patients with low literacy levels have difficulty understanding some of the language or terms used in NP questionnaires (13). Although we also found in our study that NP

was less observed in persons with higher levels of education, this finding was not statistically significant. Finally, this finding may be associated with health care, health behaviors, self-efficacy, and income.

NP was observed more in lower back, foot–ankle, knee and hand regions in our study, but none of the pain areas were indicative of NP. It is stated in the literature that back and lower extremities are affected frequently and pain in the back, hand, thigh and foot regions is said to be indicative of NP (9). The association between neuropathic pain and hand region could be due to trapped nerve, but comments on this are not possible in the present study. Extremity involvement is more frequent in the literature (4,5,14), and it is associated with the possibility that multiple painful joints may be at greater risk for central sensitization, owing to cumulative nociceptive input. Alternatively, central sensitization may contribute to the sensation of pain at multiple body sites (14). Identifying pain areas may guide us in clinical practice.

When the groups of older people with and without NP were compared, statistically significant difference was observed between the groups in terms of insomnia, loss of appetite, anxiety, attention deficit, fatigue, and lack of energy. In our study, NP was 1.6 times higher in patients with anxiety. Although the association between psychological symptoms and NP has been discussed in the literature, the effects of how these symptoms may relate to NP have not been discussed (14). This might partially explain the high comorbidity rates for chronic pain, sleep disorders, and psychological conditions such as depression and why drugs that are effective for one condition may not be effective in others (1,25). Inclusion of the aforementioned symptoms in future studies would help to assess patients from a different viewpoint.

Patient-administered screening tools for NP have also been applied in studies of specific sensory profiles in established NP conditions and in patients suffering from highly different chronic pain conditions such as cancer pain, low back pain, knee osteoarthritis, fibromyalgia, spinal cord injury, and persistent postoperative pain [4–6,8,10,14,15,19]. The prevalence of polyneuropathy in diabetic patients is 26%-50% (23,26). In diabetic polyneuropathy, pain prevalence is said to alter with age, duration of diabetes, and pathologic progression of the disease (6). We also showed in our study the percentages of patients with various diseases who had been diagnosed with NP. NP was 2.05 times higher in patients with comorbidities and 1.7 times higher in patients who took four or more drugs. These data are found particularly in studies where the cause of NP is investigated (27). However, the literature has not mentioned that these variables have been included as indicative factors for NP. This issue needs to be considered in persons with comorbidities, especially in the elderly, and patients should be assessed with respect to neuropathic pain. A definite need exists for society-based studies with broader series to demonstrate related diseases.

The strong aspects of our study include recruiting large number of patients, assessing patients through face-to-face interviews (rather than over the phone), using two different instruments to screen NP, and having obtained specific data by including only patients ≥65 years of age.

The biggest limitation of the present study was that the use of drugs for NP was not dealt with (which could mean higher rates of neuropathic pain and a greater health problem than suspected). We recommend further studies where patients with cognitive dysfunction are included.

In conclusion, NP was found in nearly half of patients aged ≥65 years who presented with pain. On the basis of the literature and the present study, it seems apparent that diagnosis of neuropathic pain has been ignored and/or underestimated in the elderly. To succeed in NP management, it must first be identified and diagnosed. We believe the present study will increase awareness in this matter.

Conflict of Interest

We had no financial support for this research and no conflicts of interest.

Author's Contributions

Kutsal YG, conception and design, acquisition of data, revising, final approval of the version

Eyigor S, conception and design, acquisition of data, analysis and interpretation of data, drafting the article and revising, final approval of the version

Doğan A, acquisition of data, analysis and interpretation of data, final approval of the version

Zardoust S,acquisition of data, analysis and interpretation of data, final approval of the version

Durmus B, acquisition of data, final approval of the version

Evcik D, acquisition of data, final approval of the version

Günaydın R, acquisition of data, final approval of the version

Sahin N, acquisition of data, final approval of the version

Aydeniz A, acquisition of data, final approval of the version

Oztop P, acquisition of data, final approval of the version

Gokkaya K, acquisition of data, final approval of the version

Hizmetli S, acquisition of data, final approval of the version

Borman P, acquisition of data, final approval of the version

Paker N, conception and design, acquisition of data, final approval of the version

Demir G, acquisition of data, final approval of the version

Kayalar G, acquisition of data, final approval of the version

Aydin E, acquisition of data, final approval of the version

Ozyemisci O, acquisition of data, final approval of the version

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