Bosphorus Medical Journal
Boğaziçi Tıp Dergisi

Original Article

DOI: 10.14744/bmj.2019.

Bosphorus Med J 2019;6(1):1–8

Comparison of Severity of Pain and Electrophysiological Severity Degree in Patients with Carpal Tunnel Syndrome

Karpal Tünel Sendromlu Hastalarda Ağrı Şiddeti ile Elektrofizyolojik Seviyenin Karşılaştırılması

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ABSTRACT

Objectives: Carpal tunnel syndrome (CTS) is the most common and best studied of all focal neuropathies. CTS is a clinical syndrome of numbness, tingling, burning, and/or pain associated with localized compression of the median nerve at the wrist.

Methods: A total of 49 hands of 32 patients who presented at the electrophysiology laboratory of the clinic due to suspected CTS were prospectively enrolled in the study. The patients were evaluated using the Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) pain scale and a visual analog scale (VAS). The LANSS pain scale is an instrument designed for use in a clinical setting to identify patients whose pain is dominated by neuropathic mechanisms. VAS is a subjective register of pain: On a 100-mm horizontal scale, 0 indicates no pain, while 100 indicates maximum pain. The patients were diagnosed using electrophysiology and grouped as mild, moderate, and severe CTS. LANSS pain scale values above 12 and below 12 were compared according to the severity of CTS. The VAS was applied separately to the right hand and left hand. LANSS and VAS results were compared separately.

Results: The LANSS pain scale value was found to be 12 or more in cases of mild and severe CTS. The response to the LANSS question related to discoloration (item 2) was greater in the patients with a LANSS score ≥12 (p=0.008), and similarly, the allodynia (item 6) response was significantly higher in the same group (p=0.010). Except for these 2 items, there was no significant difference between patients with a LANSS score of <12 or ≥12 in terms of the results of the scale. The assessment of the electrophysiological severity of the disease and the VAS score was statistically significant in both the right and left hand (p=0.001, p=0.009). When the LANSS and VAS results were compared, a statistical correlation was identified in the right hand between LANSS discoloration (item 2) (p=0.029) and the total LANSS score (p=0.049).

Conclusion: Other than allodynia, the LANSS pain scale did not show any significant correlation with electrophysiological severity in patients with CTS. In the group with a LANSS score of ≥12, the responses to item 2 (discoloration) and item 6 (allodynia) were significantly higher. VAS was statistically more significant for identifying electrophysiological severity. These results indicate that the use of VAS in daily practice is confirmed. Additional studies conducted with more detailed tests and a larger number of patients will enable patient follow-up treatment without the need for repeated electroneuromyography examinations.

Keywords: Carpal tunnel syndrome; electroneuromyography; Leeds Assessment of Neuropathic Symptoms and Signs; Visual Analog Scale.

ÖZET

Amaç: Karpal tünel sendromu (KTS) tüm tuzak nöropatilerin en yaygın ve en iyi çalışılanıdır. KTS, median sinirin el bileğinde lokalize kompresyonu ile ilişkili olan uyuşma, karıncalanma, yanma ve/veya ağrıya neden olan klinik bir sendromdur.

Yöntem: Çalışmaya prospektif olarak 32 hasta dahil edildi. Bu çalışmada KTS şüphesi nedeniyle elektrofizyoloji

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Cite this article as: Alagöz AN, Aras Y, Acar BA, Acar T. Comparison of Severity of Pain and Electrophysiological Severity Degree in Patients with Carpal Tunnel Syndrome. Bosphorus Med J 2019;6(1):1–8.

Received: 23.10.2018
Accepted: 22.02.2019

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laboratuvarında değerlendirilen toplam 32 hastada 49 el çalışılmıştır. The Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) ağrı skalası ve Visuel Analog Skalası (VAS) ile değerlendirilmiştir. LANSS ağrı skalası, ağrı nöropatik mekanizmaların hakim olduğu hastaları tanımlamak için klinik temelli bir araçtır. VAS, 100 mm yatay skalada, ağrı derecesini subjektif olarak işaretler. 0: ağrı yok, 100: maksimum ağrıyı gösterir. Elektrofizyoloji ile KTS tanısı alan hastalar hafif, orta ve ağır KTS olarak gruplandırılmıştır. KTS'nin şiddetine göre, LANSS ağrı ölçeği 12 altı ile 12 ve üstü olarak gruplandırılmıştır. Hastalar VAS ile sağ el ve sol el için ayrı ayrı değerlendirilmiş ve LANSS ve VAS ayrı ayrı karşılaştırılmıştır.

Bulgular: Hafif ve ağır KTS vakalarında LANSS ağrı ölçeğinin 12 ve daha fazla olduğu bulunmuştur. LANSS ≥12 hastalarında renk değişikliği (madde 2) (p=0.008) ve allodini (madde 6) (p=0.010) anlamlı olarak daha yüksekti. Bu iki madde hariç, LANSS <12 ve LANSS ≥12 olan hastalar arasında anlamlı bir fark yoktu. Hem sağ hem de sol elde VAS ile hastalığın elektrofizyolojik şiddeti istatistiksel olarak anlamlı bulundu (p=0.001, p=0.009). LANSS ve VAS karşılaştırıldığında, sağ el LANSS renk değişikliği (madde 2) (p=0.029) ve toplam LANSS skoru (p=0.049) arasında istatistiksel bir ilişki tespit edildi.

Sonuç: Sonuç olarak, allodini dışında LANSS ağrı skalası, KTS'li hastalarda elektrofizyolojik şiddet ile anlamlı bir ilişki göstermedi. LANSS ≥12 olan grupta madde 2 (renk değişikliği) ve madde 6 (allodini) anlamlı olarak daha yüksekti. Elektrofizyolojik şiddeti tanımlamak için VAS istatistiksel olarak daha anlamlı bulundu. Sonuçlarla, günlük uygulamada VAS kullanımı doğrulandı. Daha detaylı testlerle ve daha yüksek hasta sayılarıyla yapılacak çalışmalar, tekrarlanan ENMG tetkiklerine gerek duymadan hastanın takibini sağlayacaktır.

Anahtar sözcükler: Karpal tünel sendromu; elektronöromiyografi; The Leeds Assessment of Neuropathic Symptoms and Signs; Vizüel Analog Skala.

Carpal tunnel syndrome (CTS) is the most common and the best studied of all focal neuropathies.[1] It is caused by the compression of the median nerve as it passes under the transverse carpal ligament and between the tubercles of the scaphoid and trapezium radially and the piriform and hook of the hamate carpal bones medially.[2]

CTS isa clinical syndrome of numbness, tingling, burning and/or pain associated with localized compression of the median nerve at the wrist.[3] Pain in CTS could be dominated by neuropathic mechanism related to peripheral nerve lesion or could be mixed pain with contributions of the nociceptive mechanism related to underlying musculoskeletal or joint disease.[4]

The Leeds Assessment of is a clinical Neuropathic Symptoms and Signs (LANSS) pain scale is aclinical-based instrument for identifying patients whose pain is dominated by neuropathic mechanisms.[5] This scale is based on the analysis of sensory description and the bedside examination of sensory dysfunction.[6]

Second test used to assess pain severity is Visual Analog Scale (VAS). This measures pain along a 100 mm horizontal scale with 0 defined as no pain and 100 as the maximum pain imaginable and patients subjectively indicate the waking point of pain.[7]

Electrodiagnostic studies used in the diagnosis of CTS were found highly sensitive and specific. Thus, electrodiagnostic examination is a recommended method for CTS diagnosis.[8] The present study compares the severity of the electrophysiological findings and the severity of pain as identified by LANSS and VAS in patients who were diagnosed with CTS using electroneuromyography (ENMG).

Methods

The study is conducted in Sakarya University Medical School, Training and Research Hospital Neurology Clinic Electrophysiology Laboratory through Ethics Committee approval in a prospective way in November/December 2015.

The study registered a total of 32 patients, 49 hands who presented at the electrophysiology laboratory of our clinic due to suspected CTS and who have had paresthesiccomplaints for at least one month. The patients who had symptoms of or were diagnosed with polyneuropathy, cervical radiculopathy, and rheumatologic diseases, those with Diabetes mellitus (DM), those exposed to a toxic-chemical or used alcohol, as well as those who had a trauma or surgery involving the upper extremity were not included in the study. All electrophysiological examinations were conducted using NihonKohden (Japan 2007) 4-channel NCS/EMG/EPS system ENMG. The same clinician carried out all the examinations. The examinations were performed in a warm room and the extremity temperature was kept at around 32°C. The skin was wiped with alcohol before examination to minimize skin resistance. Sensory nerve action potential was recorded by using ring electrodes. Sensory nerve distal latency, conduction velocity, and compound muscle action potential amplitude were measured. The mean stimulation duration was 100 milliseconds, severity

was 10 to 30 milliampers and resistance was 2 to 20 Ohm in the sensory nerve studies. Silver surface electrodes were employed in motor nerve examinations. The mean stimulation duration used in motor nerve analyses was 100 milliseconds, severity was between 30 and 100 milliampers, and resistance was between 2 and 20 Ohm. While measuring the median nerve compound muscle action potential, active electrode was placed on the abductor pollicisbrevis muscle and the stimulation was given in 6 cm. proximity of the active electrode. Compound muscle action potential was considered the starting point of the wave in the distal motor latency measurement. The parameters examined in the electrophysiology laboratory are as follows:

- Median nerve motor distal latency, compound muscle action potential (CMAP) amplitude and the motor nerve conduction velocity between the wrist and the elbow.
- Sensory distal latency, sensory action potential amplitude and sensory nerve conduction velocity in the finger-elbow segment of the median nerve sensory branches by the stimulation of 2^{nd}, 3^{rd}, and 4^{th} fingers.
- Ulnar nerve motor distal latency, CMAP amplitude and motor nerve conduction velocity between the wrist and the elbow.
- Sensory distal latency, sensory action potential amplitude and sensory nerve conduction velocity in the finger-elbow segment of the ulnar nerve sensory branch by the stimulation of the 5^{th} finger.
- A distal motor latency below 4,2 milliseconds and a velocity above 50 meter/second for the median motor nerve were accepted as normal.

The patients who were diagnosed with CTS by electrophysiology were grouped as mild, moderate and severe CTS.[9]

Mild CTS: Prolongation of the median distal sensory conduction through orthodromic, antidromic or palmar pathways and/or dropping of the sensory potential amplitude below normal.

Moderate CTS: Prolongation of median nerve distal motor latency in addition to the above signs.

Severe CTS: Commonly, absence of sensory potential and a decrease in tenar motor response amplitude and delayed distal latencies. Presence of partial denervation signs in tenar needle ENMG.

The patients before ENMG are evaluated with LANSS pain scale, VAS and neurological examination. According to LANSS it is determined as below and above 12, and VAS.

Statistical analysis

Descriptive values pertaining to the data obtained (mean±SD, minimum, maximum, median and 25%, 75% percentiles, numbers and percentage frequencies) were calculated and presented in tables. The differences between LANSS <12 and LANSS ≥12 as well as the differences between the right hand dominant and left hand dominant individuals in terms of numerical properties were compared according to Mann-Whitney U test. The relations between categorical properties and LANSS <12 and LANSS ≥12, as well as the relations between the same categorical properties and the dominant hand were analyzed using the Likelihood ratio chi-square test. Level of significance was set at $p \leq 0.05$ and the calculations were carried out using PASW (SPSS ver. 18) software.The differences in VAS between right and left hand in separate CTS grades were examined by Kruskal-Wallis H test and significant differences were determined by posthoc Dunn test. Relationships between VAS and LANSS subscales and LANSS total score were assessed by Spearman rank correlation analysis (Table 6).

Results

A total of 32 patients (6 male and 26 female) who met the inclusion criteria were included in the study. Mean age was 52.3 (in the range between 34 and 76) years in women and 59.0 (in the range between 43 and 73) years in men. A total of 49 hands, 28 right and 21 left, were included in the study.

With the exception of one male patient, all patients were right-hand dominated. Of the patients, 17 (53.12%) had bilateral and 15 (46.87%) had unilateral involvement. Of those with unilateral involvement, 11 (34.37%) had right CTS and 4 (12.5%) had left CTS.

Among the right hand CTS cases, 11 (22.44%) had mild, 13 (26.53%) had moderate, and 4 (8.16%) had severe CTS, and among the left hand CTS cases, 4 (8.16%) had mild, 16 (32.65%) had moderate, and 1 (2.04%) had severe CTS. Consequently, of the 49 hands involved in the study, 15 (30.61%) had mild, 29 (59.18%) had moderate, and 5 (10.2%) had severe CTS. Of the total 49 hands, 36 (73.46%) were LANSS ≥12 and 13 (26.54%) were LANSS <12. Among the 36 hands with LANSS ≥12, 20 (55.5%) were right and 16 (44.5%) were left

Table 1. Age, sex and dominant hand of patients with CTS, by the LANSS score

	LANSS ≥12 (n=24)	LANSS <12 (n=8)	p
Age (years)	53.58±11.836	53.50±9.783	0.983
Sex (male/female)	4/20	2/6	0.610
Dominant hand (right/left)	22/2	8/0	0.274

CTS: Carpal tunnel syndrome; LANSS: Leeds Assessment of Neuropathic Symptoms and Signs.

Table 2. Median nerve conduction studies of CTS patients by the LANSS score

	CTS hands with LANSS ≥12 (n=24)	CTS hands with LANSS <12 (n=8)	p
Median motor latency (millisecond)	5.49±1.360	5.08±0.636	0.782
Median motor amplitude (mV)	12.72±4.059	12.93±3.811	0.939
Median motor conduction velocity (m/second)	50.97±3.807	53.0±2.22	0.204
Median sensory latency (millisecond)	3.46±0.488	3.55±0.425	0.438
Median sensory amplitude (μV)	7.42±3.232	7.33±3.297	0.940
Median sensory conduction velocity (m/second)	41.12±5.299	39.96±6.123	0.409

CTS: Carpal tunnel syndrome; LANSS: Leeds Assessment of Neuropathic Symptoms and Signs.

hands. Among the 13 hands with LANSS <12, 8 (61.5%) were right and 5 (38.5%) were left hands.

The comparison between the patients with LANSS <12 and LANSS ≥12 according to the age, sex, and dominant hand of the patients showed that there was no significant difference in number or percentage distribution between the two LANSS scores with respect to patient age, sex, and dominant hands (p=0.983, p=0.610, p=0.274) (Table 1).

Patients with LANSS <12 and LANSS ≥12 were compared based on the median nerve conduction results, which are presented in Table 2. An analysis of the table does not demonstrate any significant difference between the nerve conduction results of the patients with LANSS <12 and LANSS ≥12.

Table 3. Comparison between the electrophysiological severity of CTS and LANSS pain scale

	LANSS		p
	<12	≥12	
CTS electrophysiological severity, n (%)			
Mild	5 (38.5)	10 (27.8)	0.179
Moderate	8 (61.5)	21 (58.3)	
Severe	0 (0)	5 (13.9)	
Total	13	36	

CTS: Carpal tunnel syndrome; LANSS: Leeds Assessment of Neuropathic Symptoms and Signs.

When CTS patients were classified according to the electrophysiological severity of their signs as mild, moderate and severe, the relation between severity and LANSS scale is presented in Table 3. As the table shows, there is no significant relationship between the electrophysiological severity of CTS and LANSS score (p=0.179).

Table 4. Frequency of the LANSS items in CTS hands with LANSS ≥12 and LANSS <12

LANSS items		LANSS pain scale		p
		<12	≥12	
Item 1 (Dysesthesia)	0	1 (12.5)	0 (0)	0.090
	5	7 (87.5)	24 (100)	
Item 2 (Autonomic dysfunction)	0	8 (100)	14 (58.3)	0.008
	5	0 (0)	10 (41.7)	
Item 3 (Evoked pain)	0	6 (75)	10 (41.7)	0.096
	3	2 (25)	14 (58.3)	
Item 4 (Paroxysmal)	0	2 (25)	12 (50)	0.207
	2	6 (75)	12 (50)	
Item 5 (Thermal)	0	4 (50)	7 (29.2)	0.290
	1	4 (50)	17 (70.8)	
Item 6 (Allodynia)	0	7 (87.5)	9 (37.5)	0.010
	5	1 (12.5)	15 (62.5)	
Item 7 (Pin-prick test)	0	3 (37.5)	7 (29.2)	0.663
	3	5 (62.5)	17 (70.8)	

LANSS: Leeds Assessment of Neuropathic Symptoms and Signs; CTS: Carpal tunnel syndrome.

Table 5. Comparison of each item on the LANSS pain scale with the electrophysiological severity of CTS

LANSS		Mild CTS n=15 (%)	Moderate CTS n=29 (%)	Severe CTS n=5 (%)	p
Item 1	Dysesthesia (+)	15 (100)	27 (93.1)	5 (100)	0.340
	Dysesthesia (-)	0 (0)	2 (6.9)	0 (0)	
Item 2	Autonomic dysfunction (+)	3 (20)	9 (31)	4 (80)	0.045
	Autonomic dysfunction (-)	12 (80)	20 (69)	1 (20)	
Item 3	Evoked pain (+)	7 (46.7)	13 (44.8)	3 (60)	0.821
	Evoked pain (-)	8 (53.3)	16 (55.2)	2 (40)	
Item 4	Paroxysmal(+)	10 (66.7)	16 (55.2)	1 (20)	0.180
	Paroxysmal (-)	5 (33.3)	13 (44.8)	4 (80)	
Item 5	Thermal (+)	11 (73.3)	16 (55.2)	4 (80)	0.342
	Thermal (-)	4 (26.7)	13 (44.8)	1 (20)	
Item 6	Allodynia (+)	5 (33.3)	15 (51.7)	4 (80)	0.162
	Allodynia (-)	10 (66.7)	14 (48.3)	1 (20)	
Item 7	Pin-prick (+)	10 (66.7)	22 (75.9)	5 (100)	0.182
	Pin-prick (-)	5 (33.3)	7 (24.1)	0 (0)	

CTS: Carpal tunnel syndrome; LANSS: Leeds Assessment of Neuropathic Symptoms and Signs.

Table 6. Comparison of right and left hand CTS grades separately for VAS in LANSS subgroups

LANSS		VAS right hand			p	VAS left hand			p
		Mild	Moderate	Severe		Mild	Moderate	Severe	
<12	n	5	3	0		–	5	–	
	Mean	3.4	5.67	–	0.034	-	6.0	–	–
	SD	1.14	0.57	–		–	0.70	–	
	Median	3.0	6.0	–		–	6.0	–	
≥12	n	6	10	4		4	11	1	
	Mean	3.5	5.40	7.75	0.001	3.25	5.27	7.0	0.018
	SD	1.0	0.84	0.95		0.95	1.10		
	Median	3.5	5.0	7.5		3.50	5.0	7.0	

CTS: Carpal tunnel syndrome; LANSS: Leeds Assessment of Neuropathic Symptoms and Signs; VAS: Visual Analog Scale.

Table 4 presents the correlation between each item of the LANSS pain scale and the LANSS scores <12 and ≥12. The table demonstrates that discoloration (item 2) was greater in the patients with LANSS ≥12 (p=0.008) and similarly that allodynia (item 6) was significantly higher in the same group (p=0.010). Except for these two items, there was no significant difference between patients with LANSS <12 and LANSS ≥12 in terms of the items on the scale.

Table 5 shows the results of the comparison of each item on the LANSS pain scale with the mild, moderate and severe pain groups as identified by electrophysiology. When Table 5 is examined, it is seen that item 2 is found significantly highly positive only in those with severe CTS (p=0.045), while the positivity of other items does not change with CTS severity.

As a result of comparison of VAS values between right hand mild, moderate and severe CTS; the highest VAS average was obtained in severe CTS, then in moderate CTS and lowest was obtained in mild CTS (p=0.001). As a result of comparison of VAS values between left hand mild, moderate and severe CTS, VAS average was significantly higher in severe and moderate CTS compared to mild CTS (p=0.009). However, no significant difference was found between severe and moderate. When the total score of LANSS and VAS is compared in groups with 12 and above and with the group below 12; a statistically significant correlation was found in both pain scales as electrophysiological severity of the disease increase. The ones with LANSS value below 12 in right hand; there was not severe CTS (Table 6).

Table 7. The relationship between each item of LANSS and the total score of LANSS and both right and left hand VAS values

	LANSS		Visual Analog Scale right hand	Visual Analog Scale left hand
Spearman's rho	Item 1.	Correlation		
	Dysesthesia	Coefficient	0.00	0.03
		p	1.000	0.871
		n	28	21
	Item 2.	Correlation		
	Autonomic dysfunction	Coefficient	0.41	0.16
		p	0.029	0.487
		n	28	21
	Item 3.	Correlation		
	Evoked pain	Coefficient	-0.02	-0.12
		p	0.909	0.598
		n	28	21
	Item 4.	Correlation		
	Paroxysmal	Coefficient	-0.01	0.01
		p	0.945	0.945
		n	28	21
	Item 5.	Correlation		
	Thermal	Coefficient	-0.13	0.07
		p	0.494	0.753
		n	28	21
	Item 6.	Correlation		
	Allodynia	Coefficient	0.17	-0.19
		p	0.383	0.401
		n	28	21
	Item 7.	Correlation		
	Pin-prick	Coefficient	0.28	-0.20
		p	0.143	0.373
		n	28	21
	Total score	Correlation		
		Coefficient	0.37	-0.23
		p	0.049	0.304
		n	28	21

CTS: Carpal tunnel syndrome; LANSS: The Leeds Assessment of Neuropathic Symptoms and Signs; VAS: Visual Analog Scale.

In addition, there was a significant positive linear correlation between item 2 (discoloration) and right hand VAS values when the relationships between LANSS's 7 separate and LANSS total score and VAS values of both right and left hand were examined (p=0.029). According to this result, it can be said that as the discoloration score increases, the VAS score in the right hand also increases. According to this result; it can be said that as the total score of LANSS increase, the VAS score on the right hand increase significantly (p=0.049). Except that; no significant relation was found (Table 7).

Discussion

The main findings of the present study were; LANSS score was not correlated with the electrophyslogical severity of CTS. Most CTS patients seek medical help due to pain. Pain is a sensory and emotional experience that arises in response to various real or possible stimuli which pose risk of injury to the organism and tissues.[10] A number of tests have been developed to objectively assess pain.

LANSS pain scale was first described by Bennet and was used to distinguish neuropathic pain from nociceptive pain.[11] The LANSS pain scale is a seven-item scale consisting of

five questions about sensory experiences, including dysesthesia, autonomic dysfunction, evoked pain, paroxysmal pain, and thermal pain, and two items based on a bedside examination (allodynia and pinprick threshold) of the painful area.[12]

Backanja et al. suggested that the LANSS pain scale might not be appropriate for those patients with symmetrical neuropathic presentations.[13] Gürsoy et al.[4] used it in patients with bilateral painful CTS and used an adjacent non-painful area as the control, as described by Bennet. Their results showed that neuropathic pain based on LANSS may be found in %47.6 of CTS hands.

The findings of literature studies about the relation between the severity of pain and the grading of pain in the electrophysiological signs of CTS (as mild, moderate, and severe) are inconsistent. In a study using the Washington Neuropathic Pain Scale, Oncel et al.[14] found a correlation between the electrophysiological severity of CTS and the severity of pain. Consistent with our results; in another study involving Boston Carpal Tunnel Syndrome surveys, however, no significant correlation was established between the pain classified as minimal, moderate and severe and pain parameters in CTS patients.[15] A study involving 124 CTS hands and using LANSS pain scale did not reveal a significant difference between electrophysiological severity and pain scale findings in neuropathic and non-neuropathic groups.[4]

A total of 366 CTS patients with 122 Type 2 DM and 244 non-diabetic patients were studied by Tanik et al.[16] To evaluate neuropathic pain in the patients, the Douleur Neuropathique 4 Questions (DN4) scaleand VAS was applied. In the diabetic patient group a significant correlation was determined between the duration of symptoms ($p<0.05$), VAS ($p<0.001$), Beck Depression Inventory (BDI) ($p<0.001$) and fasting glucose ($p<0.001$) (Table 2). In the non-diabetic patient group, a significant correlation was determined between the Global Pittsburg sleep quality index (PSQI) score and depression ($p<0.001$) and VAS ($p<0.05$). In this study as well, VAS found to be correlated with many parameters.

In a separate study; 65 patients,who were diagnosed with electrophysiological CTS, were evaluated. In the study; symptoms of weakness and incompetence; which were determined to be related to the increase in compression intensity; parameters of Boston Symptom Severity Scale (BSRS), sensory evaluation, grip strength, tenar atrophy, hand functions and quality of life were found to be useful for classification of groups with low compression and the ones with moderate and severe compression ($p<0.005$).[17]

In the study, discoloration (item 2) and allodynia (item 6) were found statistically significantly higher in the patients with LANSS 12 and over, relative to those with LANSS lower than 12 (Table 4). The comparison between the electrophysiological severity of CTS and each item on LANSS scale did not show any statistically significant result (Table 5). Allodynia item on LANSS, which is associated with abeta-fiber dysfunction, was seen to be more common in correlation with CTS severity.[4] In our study, too, allodynia was more common in the group with a LANSS score of 12 or over (Table 4). In the assessment with VAS; VAS score was seen to increase as electrophysiological severity increased in both hands. In both groups with LANSS 12 and above and under 12; as the electrophysiological severity increased, the VAS score increase was found statistically correlated. It was seen that LANSS scores (except allodynia) were not very reliable in identifying correlation with electrophysiological severity. In the VAS evaluation, only the right hand item 2 (discoloration) and total LANSS score were found to be compatible.

Conclusion

In conclusion, LANSS pain scale did not show any significant correlation with electrophysiological severity in patients with CTS except allodynia. In the group with LANSS ≥12, item 2 (discoloration) and item 6 (allodynia) were significantly higher. VAS was found statistically more significant when detecting electrophysiological severity. With the results; VAS availability in daily practice is confirmed; studies with more detailed tests and higher patient numbers; scales will ensure patient follow-up without the need for repeated ENMG examinations.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship Contributions: Concept – A.N.A.; Design – A.N.A.; Supervision – A.N.A.; Materials – A.N.A.; Data collection &/or processing – A.N.A., Y.A.; Analysis and/or interpretation – A.N.A., Y.A.; Literature search – A.N.A., B.A., T.A.; Writing – A.N.A.; Critical review – A.N.A.

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