BIOMEDICINSKA ISTRAŽIVANJA
2024;15(1):1–11

UDK: 616.833:616-079
DOI: 10.59137/BII202401371S

Original article

Influence of aging and limb dominance on reference values of median and ulnar nerve conduction studies

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Primljen – Received: 09/04/2024
Prihvaćen – Accepted: 23/04/2024

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Summary

Introduction. Median and ulnar nerves are mixed upper limb nerves. The aim of the research was to determine reference values, and influence of aging and limb dominance on electrophysiological parameters of these nerves.

Methods. In 46 women and 14 men, aged 24 to 81, we determined the conduction velocity (CV), the amplitude, and the distal motor latency (DML) on both nerves and their change with aging and limb dominance. In the group of women the influence of the postmenopausal period on the electrophysiological parameters of the median nerve was observed.

Results. With aging, there was a significant decrease in the CV of sensitive fibers, amplitude of the motor part and DML of both nerves. In the median nerve, there was the decrease in the CV of motor fibers. On the dominant limb, there was the significant decrease in the CV of sensitive fibers of median nerve and amplitude of the sensitive part of ulnar nerve. On the dominant limb, aging caused the decrease of CV and the amplitude of the dorsal branch of the ulnar nerve, and CV of the motor fibers and DML of the median nerve. In postmenopausal women, the amplitude of the motor part of the median nerve decreased on the non-dominant limb.

Conclusion. There is the influence of age and dominance on the electrophysiological parameters of the investigated nerves. The postmenopausal period in women, apart from the influence of aging, does not represent a specific influencing factor on the investigated parameters.

Keywords: nerve conduction studies, normal values, upper limb

Introduction

Median and ulnar nerves are mixed nerves of the upper limbs. Compressive neuropathies of these two nerves are common, as well as partial or complete lesions after damage to the bones of the upper limb, and numerous systemic diseases affecting the peripheral nervous system (PNS). Electroneurography is considered the gold standard for the diagnosis of diseases of PNS [1] although there are conflicting opinions, in which primacy is given with reservations to the electroneurographic

examination [2]. There are situations where there are clear clinical signs of nerve damage, but we cannot get a confirmation by electrophysiological examination [3].

If we want to confirm the presence of a disease of the peripheral nerve, we need to be aware of the reference values of electrophysiological studies in healthy subjects. Several factors change electrophysiological parameters in healthy people - age, limb dominance, and sex are among them. The change of electrophysiological parameters with aging is a physiological process, so individual electrophysiological laboratories have their normative values depending on the age of life. After the age of 60, there is a loss of 25% of motor axons in hand muscles with a decline in the number of motor units [4]. There is a connection between aging and the decrease in the conductivity of sensory and motor nerves in healthy subjects [5, 6]. In a prospective study [7], it was confirmed that the parameters changed with aging in the same subjects at two time points. The decrease in nerve conduction velocity (CV) was 0.14 m/s per year of life. It is believed that motor and sensory nerves, which have the fastest conduction, lose axons during aging. CV falls on average by 0.5–4 m/s per decade. After the age of 60, the amplitudes of compound muscle action potential (CMAP) and sensory nerve action potential (SNAP) decrease significantly with age. In contrast, CMAP duration increases, probably due to reinnervation after axonal loss. This process begins in the third decade, approximately 1% of motor units per year, and accelerates after the age of 60 [8]. The influence of limb dominance has also been observed, so it is recommended [9] to consider it before making the diagnosis with electrophysiological tests. There is also the difference in reference values between the sexes, but the effects are not identical in motor and sensory nerves [10]. The examination of median, ulnar, radial, tibial, and common peroneal nerves found that men had higher amplitude of CMAP, longer latency and duration of the potential, while SNAP latency and duration of the potential were longer in men, and the amplitude was higher in women. It was concluded that both sexes had to have their reference values. Such literary data are corroborated by other works [10, 11].

Since in our region there are no available data, the aim of our work was to determine the normative values of the electrophysiological parameters of the median and ulnar nerves and the influence of age and limb dominance on those parameters. Since certain pathological conditions on the median nerve occur more often in postmenopausal women, the additional aim was to determine differences in electrophysiological parameters of the median nerve between premenopausal and postmenopausal women.

Methods

We analyzed the median and ulnar nerve conduction studies (NCS) in 60 healthy subjects (46 females and 14 males) performed at the Cabinet for Electromyoneurography of the Institute for Physical Medicine, Rehabilitation and Orthopedic Surgery "Dr Miroslav Zotović", Banja Luka, Bosnia and Herzegovina, between Septembar 2021 and February 2022. Data taken from the patients were: age, sex, and limb dominance. Female subjects were divided into premenopausal and postmenopausal groups and as an age limit, we took 48.8 years [12]. The inclusion criteria were a normal neurological finding without any anamnestic data on neurological symptomatology, and the electromyoneurographic finding within physiological limits according to existing reference values [8]. The exclusion criteria were: the existence of the disease of the central nervous system or systemic diseases that can cause the peripheral nerve disease, primary diseases of different etiologies, injuries, and operations on the peripheral

nerves, use of the drug that could cause peripheral nerve disease, pregnant women, and women one year after giving birth.

All measurements in this NCS were made by the same doctor using Nicolet EDX (Natus Medical Inc.) device. The room temperature was kept constant and participants were lying comfortably in the supine position. The acceptable limb temperature for performing NCS was ≥ 32°C. In the event of cool limb temperatures, the participant was warmed up using hot water bags or a heating pad to maintain the temperature. We determined the following electrophysiological parameters of the median and ulnar nerves: CV SNAP and CMAP of both nerves, the amplitude of SNAP and CMAP, and distal motor latency (DML) of both nerves on both limbs. For motor fibers, CMAP was recorded with a recording electrode placed in the middle of the abductor pollicis brevis muscle with stimulation by an electrode placed on the volar side of the forearm, between the tendons of palmaris longus and flexor carpi radialis muscles, at a distance of 7 cm from the registration electrode, while the second stimulation place was in the cubital fossa, above the pulse of the brachial artery. Maximal CMAP amplitude (peak to peak, in mV) and DML (in ms) were measured at supra-threshold stimulation intensity. Normal values were defined as ≤ 4.4 ms for DML and CV ≥ 49 m/s. The sensory fibers of the median nerve were neurographically measured using the orthodromic method, by placing the recording electrode on the volar side of the distal part of the forearm, proximal to the projection of the proximal end of the carpal canal, between the tendons of flexor carpi radialis and palmaris longus muscles. The stimulation electrode was placed on the volar side of the second finger, at the distance of 12 to 13 cm from the registration electrode. Normal values were defined as CV SNAP ≥ 50 m/s [8].

To obtain parameters of the motor part of the ulnar nerve, the recording electrode was placed in the middle of the abductor digiti minimi muscle, while the stimulation one was placed on the medial part of the volar side of the distal part of the forearm, directly next to the tendon of flexor carpi ulnaris muscle, 7 cm proximal to the recording electrode. The second place for the stimulation electrode was medial to the humerus, in the area between the tendons of biceps brachi and triceps brachi muscles, proximal to the cubital canal at the distance of 7 cm proximal to the medial epicondyle. Normal values were defined as ≤ 3.3 ms for DML and NCV ≥ 49 m/s. The parameters of the sensitive fibers of the ulnar nerve were also determined using the orthodromic method. The recording electrode was placed on the medial part of the volar side of the distal part of the forearm, proximal to Gyon's canal, next to the tendon of the flexor carpi ulnaris muscle, while the stimulation one was placed on the volar side of the fifth finger at the distance of 11 cm from the registration electrode. Normal values were defined as CV SNAP ≥ 50 m/s. For the dorsal cutaneous branch of the ulnar nerve, the stimulation electrode was placed proximally and below the ulna styloid process with the hand in pronation, while the recording electrode was placed above the distal part of the space between the fourth and fifth fingers on the dorsal side [8].

Results are presented as mean ± SD. Differences between dominant and non-dominant limbs and between premenopausal and postmenopausal women were tested with a t-test, while Pearson's correlation coefficient was used to test a possible correlation of examined parameters and age. All data were analyzed using SPSS 29 (IBM corporation) statistical software. All p values less than 0.05 were considered significant.

Results

The mean age of patients was 50.03 years (95% CI [45.79, 54.28]). The youngest patient was 24, and the oldest was 81. The average values of amplitude, CV and DML are presented in table 1.

Table 1. The average values of electrophysiological parameters of the median and ulnar nerve

Electrophysiological parameter	Mean ± SD
MN SNAP amplitude (μV)	10.052 ± 5.308
MN SNAP CV (m/s)	54.16 ± 4.789
UN SNAP amplitude (μV)	7.902 ± 3.603
UN SNAP CV (m/s)	54.68 ± 5.149
DBUN SNAP amplitude (μV)	10.041 ± 7.073
DBUN SNAP CV (m/s)	55.219 ± 6.109
MN CMAP amplitude (mV)	7.220 ± 3.270
MN CMAP CV (m/s)	62.053 ± 5.635
UN CMAP amplitude (mV)	5.555 ± 2.465
UN CMAP CV (m/s)	62.675 ± 5.930
MN DML (ms)	3.004 ± 0.382
UN DML (ms)	2.840 ± 0.633

MN - median nerve, UN - ulnar nerve, DBUN - dorsal branch of the ulnar nerve, CV - conduction velocity, DML - distal motor latency, CMAP - compound muscle action potential, SNAP - sensory nerve action potential

Table 2. Correlation of electrophysiological parameters of median and ulnar nerve with aging

	Years	
Electrophysiological parameter	r	p
MN SNAP amplitude (μV)	.062	.504
MN SNAP CV (m/s)	-.475	.000**
UN SNAP amplitude (μV)	-.062	.505
UN SNAP CV (m/s)	-.184	.044*
DBUN SNAP amplitude (μV)	-.185	.043*
DBUN SNAP CV (m/s)	-.242	.008**
MN CMAP amplitude (mV)	-.455	.000**
MN CMAP CV (m/s)	-.211	.020*
UN CMAP amplitude (mV)	-.261	.004**
UN CMAP CV (m/s)	.087	.344
MN DML (ms)	-.380	.000**
UN DML (ms)	-.282	.001**

MN - median nerve, UN - ulnar nerve, DBUN - dorsal branch of the ulnar nerve, CV - conduction velocity, DML - distal motor latency, CMAP - compound muscle action potential, SNAP - sensory nerve action potential, *statistically significant difference, **highly statistically significant difference

According to sex, we mostly had female participants (76.7%). Most participants were in the age group between 40 and 49 years. The dominant limb in 91.6% was the right one and in 8.4% the left one. With aging, we found the statistically significant decrease of CV of the median nerve, dorsal branch of the ulnar nerve, and the amplitude of the motor parts of both nerves, while DML was prolonged for both nerves. There was also the statistically significant decrease in CV of the ulnar nerve and the amplitude of the dorsal branch of the ulnar nerve, and CV CMAP of the median nerve (Table 2).

Comparing the amplitudes and CV between the dominant and non-dominant limbs, a statistically significant reduction was found on the dominant limb in the CV of the SNAP of the median nerve and the amplitude of the SNAP of the ulnar nerve also (Table 3).

Correlation of the electrophysiological parameters of the dominant and non-dominant limbs showed the statistically significant decrease in the SNAP of the median nerve amplitude on both limbs, the highly statistically significant decrease in the CMAP amplitude and the prolongation of the DML of the median nerve on both limbs. There was also the statistically significant decrease in CMAP of the ulnar nerve amplitude in both limbs and the prolongation of DML of the ulnar nerve in the dominant limb. The increase in the amplitude and CV SNAP of the dorsal branch of the ulnar nerve on the dominant limb and the increase in the CV CMAP of the median nerve on the dominant limb were demonstrated (Table 4).

After these analyses, we divided the female group according to age into premenopausal and postmenopausal women and compared the amplitude, CV, and DML of the median nerve between those two groups. The analysis showed the highly statistically significant decrease in CV SNAP and amplitude of CMAP in postmenopausal women (Table 5).

Table 3. Comparison of the investigated electrophysiological parameters of the median and ulnar nerves between the dominant and non-dominant limbs

Electrophysiological parameter	Dominant limb (mean ± SD)	Non-dominant limb (mean ± SD)	p value
MN SNAP amplitude (μV)	10.051 ± 5.492	10.053 ± 5.164	0.998
MN SNAP CV (m/s)	53.588 ± 4.847	54.733 ± 4.701	0.05*
UN SNAP amplitude (μV)	7.269 ± 3.289	8.535 ± 3.815	0.02*
UN SNAP CV (m/s)	54.86 ± 5.378	54.5 ± 4.948	0.658
DBUN SNAP amplitude (μV)	9.264 ± 7.092	10.816 ± 7.027	0.138
DBUN SNAP CV (m/s)	55.521 ± 6.614	54.916 ± 5.598	0.490
MN CMAP amplitude (mV)	7.603 ± 3.571	6.837 ± 2.92	0.065
MN CMAP CV (m/s)	62.04 ± 5.491	62.066 ± 5.821	0.974
UN CMAP amplitude (mV)	5.838 ± 2.467	5.273 ± 2.451	0.076
UN CMAP CV (m/s)	62.298 ± 5.578	63.053 ± 6.286	0.382
MN DML (ms)	3.045 ± 0.397	2.964 ± 0.365	0.061
UN DML (ms)	2.887 ± 0.569	2.794 ± 0.693	0.347

MN - median nerve, UN - ulnar nerve, DBUN - dorsal branch of the ulnar nerve, CV - conduction velocity, DML - distal motor latency, CMAP - compound muscle action potential, SNAP - sensory nerve action potential, *statistically significant difference

Table 4. Correlation of the examined electrophysiological parameters of median and ulnar nerves in the dominant and non-dominant limbs with aging

Electrophysiological parameter	**Dominant**	**limb**	**Non-dominant limb**	
	r	**p**	**r**	**p**
MN SNAP amplitude (μV)	-0.014	0.914	0.142	0.278
MN SNAP CV (m/s)	-0.557	<0.001*	-0.397	0.002*
UN SNAP amplitude (μV)	0.072	0.586	-0.179	0.172
UN SNAP CV (m/s)	-0.173	0.185	-0.196	0.133
DBUN SNAP amplitude (μV)	-0.256	0.049*	-0.116	0.379
DBUN SNAP CV (m/s)	-0.263	0.042*	-0.221	0.09
MN CMAP amplitude (mV)	-.417	.001**	-.513	.000**
MN CMAP CV (m/s)	-0.306	0.018*	-0.123	0.35
UN CMAP amplitude (mV)	-.261	.004*	-.264	.041*
UN CMAP CV (m/s)	0.059	0.653	0.112	0.393
MN DML (ms)	.361	.004**	.406	.001**
UN DML (ms)	.354	.004**	.226	.075

MN - median nerve, UN - ulnar nerve, DBUN - dorsal branch of the ulnar nerve, CV - conduction velocity, DML - distal motor latency, CMAP - compound muscle action potential, SNAP - sensory nerve action potential, *statistically significant difference, **highly statistically significant difference

Table 5. Differences in median nerve parameters between premenopausal and postmenopausal women

Electrophysiological parameter	Premenopausal (mean ± SD)	Postmenopausal (mean ± SD)	p value
MN SNAP amplitude (μV)	9.813 ± 4.191	10.077 ± 6.276	0.819
MN SNAP CV (m/s)	56.032 ± 4.875	52.742 ± 4.510	0.001**
MN CMAP amplitude (mV)	7.987 ± 2.899	5.876 ± 3.068	0.001**
MN CMAP CV (m/s)	63.43 ± 5.330	61.736 ± 6.205	0.172
MN DML (ms)	2.984 ± 0.286	3.065 ± 0.436	0.268

MN - median nerve, MN - median nerve, CV - conduction velocity, DML - distal motor latency, CMAP - compound muscle action potential, SNAP - sensory nerve action potential
**highly statistically significant difference

Table 6. The influence of menopause on amplitude and velocity and distal motor latency of median nerve in dominant and non-dominant limbs

Electrophysiological parameter	Premenopausal (mean ± SD)	Postmenopausal (mean ± SD)	p value
MN SNAP amplitude (μV) dominant limb	10.295 ± 4.366	9.754 ± 6.637	0.754
MN SNAP CV (m/s) dominant limb	55.48 ± 5.135	51.819 ± 4.199	0.011*
MN SNAP amplitude (μV) non-dominant limb	9.330 ± 4.064	10.4 ± 6.008	0.497
MN SNAP CV (m/s) non-dominant limb	56.585 ± 4.666	53.665 ± 4.699	0.042*
MN CMAP amplitude (mV) dominant limb	8.285 ± 3.076	6.496 ± 3.572	0.075
MN CMAP CV (m/s) dominant limb	64.075 ± 5.258	60.915 ± 5.781	0.063
MN CMAP amplitude (mV) non-dominant limb	7.69 ± 2.756	5.255 ± 2.368	0.002*
MN CMAP CV (m/s) non- dominant limb	62.785 ± 5.459	62.558 ± 6.612	0.902
MN DML (ms) dominant limb	3.036 ± 0.295	3.093 ± 0.476	0.634
MN DML (ms) non-dominant limb	2.933 ± 0.275	3.037 ± 0.398	0.312

MN - median nerve, UN - ulnar nerve, DBUN - dorsal branch of the ulnar nerve, CV - conduction velocity, DML - distal motor latency, CMAP - compound muscle action potential, SNAP - sensory nerve action potential, *statistically significant difference

Comparison of electrophysiological parameters of the median nerve between premenopausal and postmenopausal groups, in relation to the dominant and non-dominant limbs, showed the statistically significant reduction in CV SNAP of the median nerve on both limbs and CMAP amplitude on the non-dominant limb in postmenopausal subjects (Table 6).

Discussion

The aging process affects the hand as the most active part of the upper limb. Changes in the PNS lead to an impaired performance of motor units [13] and in the elderly there is a loss of approximately 25% of hand motor axons [4]. Correct sensory input is required for the control of objects in the hand and coordination of

the tips of the fingers [15, 16]. The decrease in tactile sensitivity contributes to the slowing of the sensory input and the deterioration of skin mechanoreceptors [4, 17]. The CV decreases with aging [18, 19]. Such data should be compared with the values of other researchers to confirm the effect of ethnicity or nationality on NCS [11, 20, 21]. We did not find the NCS data in our environment, which was the motive for this research.

Sixty volunteers aged between 24 and 81 participated in our research. With increasing years of life in both upper limbs, there was the statistically significant decrease in the CV SNAP of the median and ulnar nerves, as well as the amplitude and CV of the SNAP of the dorsal branch of the ulnar nerve. As for motor fibers, the statistically significant decrease in CV CMAP fibers of the median nerve was found, and highly statistically significant decrease in the amplitude of both nerves with age, more pronounced in the median nerve. With aging, DML was prolonged for the median nerve on both limbs and the ulnar nerve only on the dominant limb.

Morphological studies in the elderly population have shown that the number and diameter of myelinated and unmyelinated nerve fibers, muscle strength, sensory discrimination, endoneurial blood flow, and autonomic responses decrease with aging [19]. The loss of nerve fibers begins at the age of 25 and 24–40% of maximum isometric strength is lost till the 7th decade, which affects the CV [22]. With aging, there is the increase of free radicals and the decrease of ATP, which are responsible for slower muscle contraction and changes in the neuromuscular junction [22].

Tong et al. [7] found that the changes of sensory fibers in the median nerve were greater compared to the ulnar nerve. It is caused by increased sensitivity of the medial nerve due to repetitive movements and pressure in the carpal tunnel. In the study [23], there was the significant decrease in the amplitude and CV of SNAP of both nerves, while in the study [24] the significant decrease in the CV and amplitude of the SNAP of the median nerve was seen in healthy subjects up to the age of 60. We did not find any significant decrease in SNAP amplitude in both nerves, but we found the significant reduction in CV of SNAP in both nerves. It was probably caused by the loss of the myelin sheath of sensitive nerves significantly affecting the decrease of CV. The decrease seen in amplitude and CV of SNAP of the dorsal sensitive branch of ulnar nerve with aging indicates a loss of fibers associated with its small diameter, and sensitivity when passing through the fascial spaces towards the surface structures.

Literature data also confirm our results that the CMAP amplitude of the median nerve significantly decreases bilaterally with age [11]. The influence of age on electrophysiological parameters of the median nerve and ulnar nerve was compared among three age groups: 18–30 years, 31–45 years and 46–60 years [23]. There was no significant decrease in the amplitude of CMAP of the median nerve, but there was the significant decrease in the amplitude of CMAP of the ulnar nerve, and CV CMAP in both nerves with age. DML of both nerves increased with aging, which was caused by the loss of both myelinated and unmyelinated nerve fibers [23, 25]. Our results showed the significant decrease in the amplitude of CMAP of the median and ulnar nerves, while the decrease in CV CMAP was found only in median nerve. There was also the significant increase in DML in both nerves. We did not prove the relationship between age and reduction of CV CMAP of the ulnar nerve. Awang et al. [6] also found only the decrease in CV CMAP median nerve and excluded the influence of age on CV CMAP ulnar nerve. Such results were confirmed by the studies [21, 26]. Ultrasound imaging found morphological changes in the cross-section of the median nerve in the wrist and the ulnar nerve in the cubital fossa connected with age [27].

There was no significant difference in the CV of the median and ulnar nerves between the dominant and non-dominant limbs in the same person, but nerve conduction itself was higher in right-handed people for both limbs [9]. However, in the study [28], CV SNAP of the median nerve was found to be significantly higher in left-handed people, while no difference was found in motor conduction. These researches were conducted among medical students, so the information on age effect was not complete. In our research, comparing the parameters of the dominant and non-dominant limbs, the existence of lower values on the dominant limb in CV SNAP of the median nerve and SNAP of the ulnar nerve amplitude was confirmed. It seems that the nerves during the activity of the dominant limb are more exposed to traction and compression when passing through anatomically narrowed spaces. In the study [20], the parameters were compared in people with the age range from 15 to 74 years, and also no difference was found between the dominant and non-dominant limbs for the motor parameters of both nerves, while sensory amplitude of the median nerve was the only parameter which had a statistical difference.

The correlation of aging and the examined parameters of the median nerve and ulnar nerve compared to the dominant and non-dominant limbs showed the statistically significant decrease in the CMAP amplitude of the median and ulnar nerves, as well as a prolongation of the DML of the median nerve on both limbs, which was in accordance with the findings regardless of the dominance. The statistically significant negative correlations on the dominant limb of DML of the ulnar nerve and CV CMAP of the median nerve were also found. Considering that both parameters independently of dominance correlated statistically significantly with years of life, we could see that the obtained result was carried by the dominant limb. Looking at the motor fiber parameters, only for CV CMAP ulnar nerve we did not find the statistically significant difference, which confirms the result of the sample independent of dominance.

If we look at the sensitive part of both nerves, a statistically significant correlation with the age of life was found on both limbs in CV SNAP of the median nerve. In other parameters, CV of the ulnar nerve on both limbs and SNAP amplitudes of both nerves, no statistically significant correlation was found. For the ulnar nerve, the total sample, regardless of dominance, showed the significant negative correlation with age. Absolute numbers indicated a slowdown in velocity on both limbs, but it is not statistically significant.

The carpal tunnel syndrome is more common among postmenopausal women [29], so we divided the sample of 49 women into premenopausal (N=20) and postmenopausal groups (N=29). We took 48.8 years as the average age for natural menopause, as reported in a review article [12] that analyzed 46 studies from 24 countries. There was the highly statistically significant decrease in CV SNAP and CMAP amplitude in postmenopausal women. In the research of Esmeli et al. [20] participants of both sexes were divided into younger and older than the age of 50. Out of their results, we analyzed data only in the female group. CV and amplitude of CMAP and SNAP significantly decreased in women aged 50 and over. The decrease in CV SNAP in our work was statistically significant, but still within the limits of physiological variations. No significant difference in DML between premenopausal and postmenopausal women was found. The significant decrease in CMAP amplitude is consistent with the decrease in parameters with age. Observing these two groups in relation to limb dominance, the statistically significant reduction in CV SNAP on the dominant and non-dominant limbs and CMAP amplitude on the non-dominant limb in the group of postmenopausal subjects were seen supporting the findings regardless of the dominance. In the diagnosis of CTS in every-

day practice CV SNAP and DML are important [8], so it seems that the postmenopausal period is not the significant risk factor, but rather a series of other factors which together lead to disease.

The main limitation of our study was a small sample of male participants.

Conclusion

Electrophysiological parameters of the median and ulnar nerves in our population change with age, and some of the parameters also depend on the limb dominance. In postmenopausal women, these parameters change with years of life, without the influence of specific factors.

Funding source. The authors received no specific funding for this work.

Ethical approval. The Ethics Committee of the Department for Physical Medicine and Rehabilitation "Dr Miroslav Zotović", Banja Luka, Republic of Srpska, Bosnia and Herzegovina, in March 2022 (No. 116-01-3107-2/22), approved the study and informed consent was obtained from all individual respondents. The research was conducted according to the Declaration of Helsinki.

Conflicts of interest. The authors declare no conflict of interest.

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Uticaj starenja i dominantnosti ekstremiteta na referentne vrijednosti studija nervne provodljivosti nervusa medianusa i nervusa ulnarisa

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Uvod. N. medianus i n. ulnaris su važni za motoriku i senzibilitet šake. Cilj istraživanja je bio odrediti referentne vrijednosti, uticaj starenja i dominantnosti ruke na elektrofiziološke parametre navedenih nerava.

Metode. Kod 46 žena i 14 muškaraca, starosti od 24 do 81 godine, određivali smo brzinu provodljivosti (CV), amplitudu i distalnu motornu latencu (DML) oba nerva, njihove promjene sa starenjem i dominantnošću ekstremiteta. U grupi žena u postmenopauzalnom periodu praćen je uticaj postmenopauzalnog perioda na elektrofiziološke parametre n. medianusa.

Rezultati. Sa starenjem je postojao značajan pad CV senzitivnih vlakana, amplitude motornog dijela i DML oba nerva. Kod n. medianusa uočeno je smanjenje CV motornih vlakana. Na dominantnoj ruci postoji značajan pad CV senzitivnih vlakana n. medianusa i amplitude senzitivnog dijela n. ulnarisa. Na dominantnoj ruci starenje je prouzrokovalo smanjenje CV i amplitude dorzalne grane n. ulnarisa, te CV motornih vlakana i DML n. medianusa. Kod žena u postmenopauzi značajno se smanjila amplituda motornog dijela n. medianusa na nedominantnoj ruci.

Zaključak. Postoji uticaj starosti i dominantnosti na elektrofiziološke parametre ispitivanih nerava. Postmenopauzalni period kod žena, osim uticaja starenja, ne predstavlja specifičan faktor uticaja na ispitivane parametre.

Ključne riječi: studije nervne provodljivosti, normalne vrijednosti, gornji ekstremitet