

INFLUENCE OF AGE ON MOTOR NERVE CONDUCTION

S. K. GANERIWAL, B. V. REDDY, A. D. SURDI, A. N. KOWALE AND P.B. ZAWAR

*Department of Physiology,
V.M. Medical College, Solapur -- 413 003*

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Summary : Motor nerve conduction velocity (MNCV) has been determined in seventyfive normal healthy male subjects in different age groups in Right ulnar and median nerves respectively. It is observed that MNCV decreases in the older age group. Further it is seen that MNCV is less in the distal than in the proximal segment, the results being significant in the median nerve.

Key words : nerve conduction
proximal segment

effect of age
distal segment

INTRODUCTION

The most important investigations indicating peripheral nerve damage are motor and sensory nerve conduction studies, and electromyography. Of these, the determination of motor nerve conduction velocity (MNCV) is an easier procedure and is equally informative. The present study is desired to define our own control values for motor nerve conduction in different age groups. The study will provide us age matched controls for further studies on motor nerve conduction in diseases viz. leprosy, diabetes mellitus etc. where it has a distinct value to conform the earlier stages of nerve damage before the appearance of clinical symptoms. It was also thought useful to find out MNCV in proximal and distal segments of the ulnar and median nerves separately to see whether there is any change in MNCV from proximal to distal segments.

MATERIAL AND METHODS

A total of seventyfive healthy male subjects without any neurological and metabolic disorders were selected for the present study. Depending upon the age, they were divided into three groups as given in Table I.

The motor nerve conduction velocities (MNCV) were determined in right ulnar and right median nerve by stimulating percutaneously along their course at three distances from hypothenar muscles for ulnar nerve, and from thenar muscles for median nerve, viz. axilla, elbow and wrist (4). Bipolar low resistance metal electrodes with cotton cover

TABLE II : MNCV in proximal segment of Right ulnar nerve.

Group	No. of subjects	MNCV in metres/sec	Statistical significance	
			Groups compared	P
I	25	61.00±7.99	I and II	—
II	25	56.9±4.05		
III	25	52.5±3.86	I and III	0.001

TABLE III : MNCV in distal segment of Right ulnar nerve.

Group	No. of Subjects	MNCV in meters/sec	Statistical significance	
			Groups compared	P
I	25	59.2±4.48	I and II	—
II	25	56.4±4.7		
III	25	50.7±3.3	I and III	0.001

TABLE IV : MNCV in proximal segment of Right median nerve.

Group	No. of subjects	MNCV in meters/sec	Statistical significance	
			Groups compared	P
I	25	65.4±11.6	I and II	—
II	25	60.2±7.35		
III	25	54.9±7.97	I and III	0.001

TABLE V : MNCV in distal segment of Right median nerve.

Group	No. of subjects	MNCV in meters/sec	Statistical significance	
			Groups compared	P
I	25	55.0±4.7	I and II	—
II	25	54.4±5.3		
III	25	48.1±5.6	I and III	0.001

TABLE VI : MNCV in proximal (P) and distal (D) segments of Right ulnar nerve.

Sr. No.	Group	No. of subjects	Segment of the nerve	MNCV in meters/sec	Statistical significance	
					Sr. No. compared	P
1	I	25	P	61.0±7.99	1 and 2	
2	I	25	D	59.2±4.48		
3	II	25	P	56.9±4.05	3 and 4	
4	II	25	D	56.4±4.7		
5	III	25	P	52.5±3.86	5 and 6	
6	III	25	D	50.7±3.3		

TABLE VII : MNCV in proximal (P) and distal (D) segments of Right median nerve.

Sr. No.	Group	No. of subjects	Segment of the nerve	MNCV in metres/sec	Statistical significance	
					Sr. No. compared	P
1	I	25	P	65.4±11.6	1 and 2	0.001
2	I	25	D	55.0±4.7		
3	II	25	P	60.2±7.35	3 and 4	0.001
4	II	25	D	54. ±5.3		
5	III	25	P	54.9±7.97	5 and 6	0.001
6	III	25	D	48.1±5.6		

DISCUSSION

Our results indicate a decrease in MNCV in both ulnar and median nerves with the advancement of age. The results are significant in Group-III, when compared with those of Group-I, indicating that decrease in MNCV is significant beyond the age of 50 yrs. As all our subjects were healthy and had no apparent disorders, it indicates that this decrease in conduction velocity with increasing age may be physiological. Several other workers viz. Norris *et al.*(9) and Mulder *et al.* (8), have also reported slowing of conduction velocity with the advancement of age. Lal and Anantharaman (6) have also shown a decrease in MNCV in ulnar nerves with advancement of age. Further Kaeser (5) has reported about 10% decrease in velocity in third decade itself. Thus the changes in the

nerves may start at an early adult life, although they are prominent after the age of 70 years. Bradley (2), Cottrell (3), Vizoso(10), Lascelles *et al.*(7) and Arnold *et al.* (1) showed that degenerative changes of the vasonervorum increased fibrosis, segmental demyelination and axonal degeneration occur with ageing. The decrease in velocity with advancing age could be due to these changes in nerves.

Our findings indicate a decrease in conduction velocity from proximal to distal segments both in ulnar and median nerves. The findings are not significant in the ulnar nerve. However, with the present available evidences, it is difficult to explain the decrease in MNCV in distal segment of the median nerve.

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