



STUDY OF SENSORY AND PAIN THRESHOLD IN ELDERLY.

Physiotherapy

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ABSTRACT

Introduction: Sensory threshold is defined as the lowest intensity of sensory stimulus and pain threshold as the lowest intensity of noxious stimulus experienced by an individual.

Methods: A cross-sectional study was conducted in ten young males in age group of 18 to 25 years and ten elderly males above 65 years of age. A diagnostic electrical stimulator was used to evaluate sensory and pain threshold using galvanic current.

Results: The mean age of 10 young and 10 elderly males was 21.6 ± 2.22 and 68.4 ± 5.34 years respectively. It was observed that sensory ($p = 0.000$) and pain threshold values ($p = 0.019$) were higher in elderly males than young males using unpaired t test.

Conclusion: It is observed that as age advances there is an increase in sensory and pain threshold. Evaluation of sensory and pain threshold is essential for management of pain in elderly.

KEYWORDS

pain, sensory, threshold, elderly.

INTRODUCTION

Pain is a complex sensory phenomenon based on the amalgamation of nociceptive inputs received from sensory receptors and are processed centrally through neural systems. It serves an important protective mechanism so as to avoid the stimulus and prevent injury. The perception of pain is subjective and can vary greatly among individuals. According to the International Association of Study of Pain (IASP), pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage⁽¹⁾.

A minimum amount of stimulation before a sensation is perceived is called as threshold. Sensory threshold is defined as the lowest intensity of sensory stimulus experienced by the subject. Pain threshold is defined as the lowest intensity of noxious stimulus experienced by an individual⁽²⁾. The aim of this study was to analyse the sensory and pain threshold among young and elderly males.

MATERIAL & METHODS

Institutional Research Review Committee approval was obtained before starting the study. Ten young males in age group of 18 to 25 years and ten elderly males above 65 years of age were selected. Exclusion criteria included any neuromuscular disorders, perceptual problem, impaired sensations and psychomatic disorders. A written informed consent was obtained from the subjects.

A diagnostic electrical stimulator was used to evaluate sensory threshold and pain threshold with the help of direct or galvanic current. Sensory threshold is defined as the lowest intensity of sensory stimulus experienced by the subject at the first instance of testing. Pain threshold is defined as the lowest intensity of noxious stimulus experienced by the subject⁽²⁾. Three readings were procured. The average of the three readings was calculated and was recorded. Data obtained was statistically analysed using the SPSS software version 21.0 (Statistical Package for Social Sciences). Parametric tests were used to find the effect of gender and dominance on carrying angle. Levels of significance was set at $p < .05$.

RESULTS:

The present study included 20 subjects, 10 young and 10 elderly males with mean age of 21.6 ± 2.22 and 68.4 ± 5.34 years respectively. It was observed that sensory ($p = 0.000$) and pain threshold values ($p = 0.019$) were higher in elderly males than young males using unpaired t test (Table 2).

Table-1 Mean values of age in young and elderly males.

	Young males N = 10	Elderly males N = 10
	Mean \pm SD	Mean \pm SD
Age (in years)	21.6 ± 2.22	68.4 ± 5.34

Table-2 Shows comparison of pain and sensory threshold in young and elderly males.

	Young males N = 10	Elderly males N = 10	p value
	Mean \pm SD	Mean \pm SD	
Sensory threshold	5.8 ± 1.51	9.15 ± 1.55	0.000*
Pain threshold	9.65 ± 0.78	11.15 ± 0.67	0.019*

*p value < 0.05 is statistically significant.

DISCUSSION

The present study aimed to analyse the sensory and pain threshold in elderly and young males. It was observed that sensory and pain threshold values were higher in elderly males as compared to young males. It has been noted that elderly population experience persistent and disabling chronic pain⁽³⁾. Also, aging is associated with greater probability of pain, more pain locations and the development of other chronic ailments associated with pain⁽⁴⁾. Aging induces changes in neuromusculoskeletal system. There is reduction in the density of myelinated and unmyelinated peripheral fibres with age⁽⁵⁾. Also, increased damage or degeneration is observed in myelinated and unmyelinated nerve fibres with advancing age. There is slowing of peripheral nerve conduction velocity⁽⁶⁾.

Selective age-related impairment of myelinated nociceptive fibre function in elderly has been observed⁽⁷⁾. A meta-analysis of over 50 studies that examined age differences in sensitivity to induced pain which indicated that there is an increase in pain threshold with advancing age⁽⁸⁾.

A recently published study compared pain perception in 40 men, half with a mean age of 27.1 years and the other with a mean age of 71.6 years which demonstrated that somatosensory thresholds for non-noxious stimuli increased with age whereas pressure pain thresholds values were reduced^(9,10). One of the possible reasons pointed out by the researchers may be reduction in endogenous pain inhibition in elderly individuals⁽¹¹⁾.

CONCLUSION:

It is observed that as age advances there is increase in sensory and pain threshold as compared to younger counterparts. This will help the physical therapists to be cautious during application of electrotherapeutic modalities to elderly patients. Also, holistic approach towards assessment and management of pain in elderly should be administered considering the sensory and pain threshold values.

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