

Wide range of normality in deep tendon reflexes in the normal population

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Abstract

Background and objective: Deep tendon reflexes are important physical signs in neurological examination. Despite being an established technique clinically, there is lack of normality data in the healthy population, especially among the elderly. This study aims to determine the range of normality in deep tendon reflexes among the adults. *Methods:* The study subjects consisted of 176 healthy volunteers. They were examined by trained assessors using standardized protocol. *Results:* Among the commonly elicited deep tendon reflexes, isolated absent reflexes were found in up to 34.4% (supinator) in the older group, and 12.5% (triceps) in the young adults, significantly higher in the older group. Symmetrical absent reflexes was seen in up to 26.3% of supinator in the older group. Absent reflexes of the entire limbs both sides were however, much less common particularly among young adults, with 6.3% of the older group having absent reflexes in the entire lower limbs, and 2.5% in the entire upper limbs. Isolated asymmetry in reflex was present in up to 17.0% (triceps). However, only 6.3% had asymmetrical reflexes in the contiguous anatomical region.

Conclusion: Isolated absent or asymmetry deep tendon reflexes were common particularly in the elderly.

INTRODUCTION

Reflexes is defined as a reflected action or movement; the sum total of any particular automatic response mediated by the nervous system.¹ The reflex arc consists of its afferent fibre which forms the sensory limb, an efferent fibre that forms the motor limb as well as the effector.

Deep tendon reflexes are important physical signs in neurological examination. The reflexes are influenced by various factors; including age, sex, and examiner's techniques.²⁻³ Asymmetry of reflexes can be due to techniques, related to the patient's posture, position of the joint and technique of the examiner. The absence of deep tendon reflexes and asymmetry of deep tendon reflexes are widely used as guide to indicate pathology. Despite its widespread use, there are limited published studies on the normal range for deep tendon reflexes in both the elderly and the young. This is also true for other neurological examination.⁴ This study aims to help fill this gap, to serve as scientific basis for the daily clinical decision-making.

METHODS

One hundred and seventy six subjects consisting 96 young adults aged below 40 years and 80 older volunteers aged 40 and above were recruited. Those with neurological symptoms and abnormal signs (other than the deep tendon reflexes), known neurological disease or diabetes mellitus were excluded. The subjects were examined by trained assessors.

All assessors were clinical students who have undergone special training in the standardized examination method for the deep tendon reflexes. The assessors were required to pass an assessment test by the senior author (KSL) who is a neurologist. A preliminary study involving 144 subjects was also carried out to improve the technique of examination. The results were not included in this presentation. The subjects' background biodata and grading of the reflexes were recorded in a standardized format. Informed consent was obtained from all subjects.

The examination was performed in a symmetric and relaxed position. Reflexes examined include pectoralis reflex⁵, biceps reflex, triceps reflex,