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Rock–paper–scissors

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Abstract

A study of 20 doctors in their first or second postgraduate year highlighted deficiencies in their knowledge of the nerve supply of the hand and forearm. The children's game rock–paper–scissors (Figs. 1–3) can be used as a simple aide-memoir for the nerve supply to the hand and forearm. The median nerve creates the "rock position" of the pronated fist (Fig. 1). The radial nerve extends the wrist and hand forming the "paper position" (Fig. 2a and b) and the ulnar nerve creates the "scissor position" (Fig. 3), by clawing the ring and little fingers and spreading the index and middle and adducting the thumb and flexing the interphalangeal joint.

1. Introduction

The nerve supply of the hand can be difficult for junior trainees and students to remember. It is an important area for reflection as they are likely to be the first to see patients with injuries to the upper limb, which may at first seem either minor or manageable by conservative measures. Assessment of improving function in peripheral nerve palsies is also extremely important. Furthermore, the risk of medico-legal proceedings against those who fail to diagnose and treat peripheral nerve injuries appropriately, ensures that full knowledge is essential to all.

A study of a group of 20 doctors in their first or second postgraduate year highlighted deficiencies in their knowledge of the nerve supply of the hand and forearm. The children's game rock–paper–scissors (Figs. 1–3) can be used as a simple aide-memoir for the nerve supply to the hand and forearm. This is a simple game and may be used by two people to decide matters in much the same way as tossing a coin. On the count of three each player simultaneously selects a hand position. Each position wins or loses to one of the others. Thus, the rock breaks the scissors. The scissors cut the paper. The paper smothers the rock.

2. Method and results

A series of simple clinical questions regarding the distribution and function of the median, radial and ulnar nerves was used to assess a group of 20 doctors in their first or second postgraduate year. This study was performed throughout the calendar year as the doctors rotated through orthopaedics. Sixteen were house officers and four were senior house officers. This highlighted significant deficiencies in their knowledge of the nerve supply of the hand. The questions were designed to give a simple mark out of 10 (Table 1).

The range of scores was from 2 to 5, with a mean of 3. No doctor correctly gave the sensory supply of all three nerves, or correctly gave the full motor function of any one nerve.

3. Discussion

It can be seen from this simple testing that deficiencies lie at the junior level when examining and assessing the nerve function of the hand. This is important, as they are relied on to assess hand and upper limb injuries, both acutely and during rehabilitation. The simple aide-memoir utilising the children's game "rock–paper–scissors" can help remind all those who have not, or do not, examine these systems with enough regularity to ensure clear memory of the motor functions of the median, radial and ulnar nerves.

Firstly it is important to remember that all three are mixed motor and sensory nerves. It is important to familiarise oneself not only of the areas of distribution of these nerves but also with the dermatomes of the upper limb in order to differentiate from higher lesions.

The motor supply of the median nerve is often thought of in terms of carpal tunnel syndrome, which seems to be one of those conditions that one learns of early. However, the full

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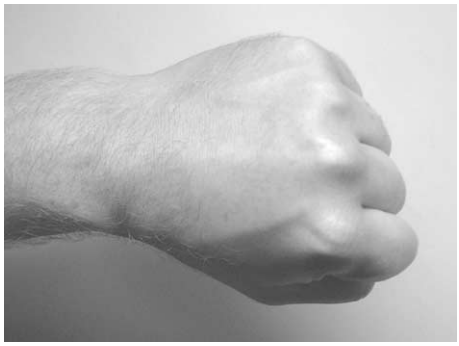


Fig. 1. Rock: the pronated fist, median nerve.

Fig. 3. Scissors: the ulnar nerve.

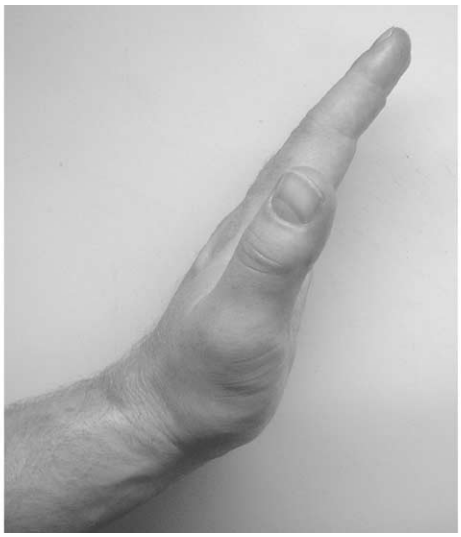
motor supply is often forgotten. The median nerve creates the "rock position"—the pronated fist (Fig. 1). The muscles involved are, in order of proximal branching from the nerve: pronator teres; flexor carpi radialis; palmaris longus; flexor digitorum superficialis; flexor digitorum profundus II and III; flexor pollicis longus; pronator quadratus; abductor pollicis brevis; flexor pollicis brevis; opponens pollicis; lumbricals I and II. APB, FPB, OP and lumbricals are those muscles weakened in carpal tunnel syndrome, as their branches come off the end of the median nerve in the hand [1–5].

The motor supply of the radial nerve essentially extends the wrist and hand forming the "paper position" (Fig. 2a and b). The muscles involved, in order of proximal branching from the nerve are: extensor carpi radialis longus; extensor carpi radialis brevis; extensor carpi ulnaris; extensor digitorum; extensor digiti minimi; abductor pollicis longus; extensor pollicis longus; extensor pollicis brevis and extensor indicis. Remember to open and supinate the hand as the radial nerve also supplies supinator. The supinator branch is a convenient way to remember the site of the radial nerve division into the sensory superficial radial nerve and motor posterior interosseous nerve [1–5].

Table 1

Questions	Scoring out of 10
Radial nerve sensory/motor/mixed	1 point
Median nerve sensory/motor/mixed	1 point
Ulnar nerve sensory/motor/mixed	1 point
Radial nerve sensory supply	1 point
Radial nerve motor supply	2 points for full knowledge, 1 point for basic
Median nerve sensory supply	1 point
Median nerve motor supply	2 points for full knowledge, 1 point for basic
Ulnar nerve sensory supply	1 point
Ulnar nerve motor supply	2 points for full knowledge, 1 point for basic

(a)



(b)

Fig. 2. (a, b) Paper: the extended wrist and hand, radial nerve.

The ulnar nerve creates the “scissor position” (Fig. 3), by clawing the ring and little fingers and spreading the index and middle and adducting the thumb and flexing the thumb IP joint. Remember that the anatomical position is with the hand open. Thus, the muscles involved are, again in order: flexor carpi ulnaris; flexor digitorum profundus; abductor digiti minimi, opponens digiti minimi, flexor digiti minimi; lumbricals III and IV; first palmar and dorsal interossei; flexor pollicis brevis; adductor pollicis [1–5]. With this simple utilisation of a children’s game it is hoped to produce a teaching aid to help students, junior doctors and others to remember the nerve supply to the muscles of the hand.

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