SESSION A: THE INTRINSIC MINUS HAND

1. A review of function and pathology of intrinsic muscles

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(ABSTRACT NOT RECEIVED).

2. Lumbrical tightness: testing and stretching

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Introduction: Clinicians describe a passive test for intrinsic tightness. This study differentiates interosseous tightness testing from lumbrical tightness testing. Additionally this study shows that the test position for lumbrical tightness and the stretching position for lumbrical tightness is different.

Materials and methods: Results of nine cadaver dissections of the index lumbrical muscle show that simulated lumbrical tightness with simulated active finger flexion significantly diminishes interphalangeal flexion as compared with simulated active finger flexion without simulated lumbrical tightness. Maximum elongation of the lumbrical muscle occurs when the metacarpophalangeal joint is extended and the interphalangeal joints are actively flexed.

Discussion and Conclusion: Paradoxical extension of the DIP joint/s at the end-range of active finger flexion demonstrates lumbrical tightness. Maximum lumbrical length occurs with MP extension and active IP flexion. Therefore, unlike the interosseous muscle, the lumbrical muscle tightness testing position and stretching position is different. Also unlike the interosseous muscle, the lumbrical muscle can only be elongated with active, not passive, motion.

3. Hand strength and fatigue in patients with hereditary motor and sensory neuropathy (type I and II)

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Introduction: In the upper extremity of patients with HMSN the intrinsic muscles of the hand are primarily affected. Typical atrophy and muscle weakness is generally assessed using peak force measurements. However, HMSN patients indicate that disability is experienced in sustained activities. This suggests that hand strength assessment in these patients should also focus on the decline in strength during effort.

Aims: To compare hand strength and fatigue between HMSN subjects and healthy controls.

Materials and methods: Maximal isometric handgrip strength (PFgrip) and the decline in PFgrip during three sets of 15 contractions (fatigue) were compared between 20 HMSN subjects and 20 matched healthy controls. Two-point and lateral pinch measurements were standardized against reference values. Reproducibility of the experimental set up was studied in 15 healthy subjects at two separate occasions with an interval of 1 week.

Discussion and conclusion: PF grip was significantly lower in HMSN subjects and reproducibility was excellent. Also the two-point and lateral pinch measurements were significantly lower than reference values. Reproducibility of fatigue was poor. Although no significant difference in force decline between HMSN and healthy controls could be found, a reduced hand strength may predispose HMSN patients to early fatigue in sustained activities.

4. The relation between hand strength and hand function in patients with HMSN (Type I and II)

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Introduction: Evaluation of hand strength is considered as a parameter for hand function. No data are available on its relation with hand function in subjects with hereditary motor and sensory neuropathy (HMSN).

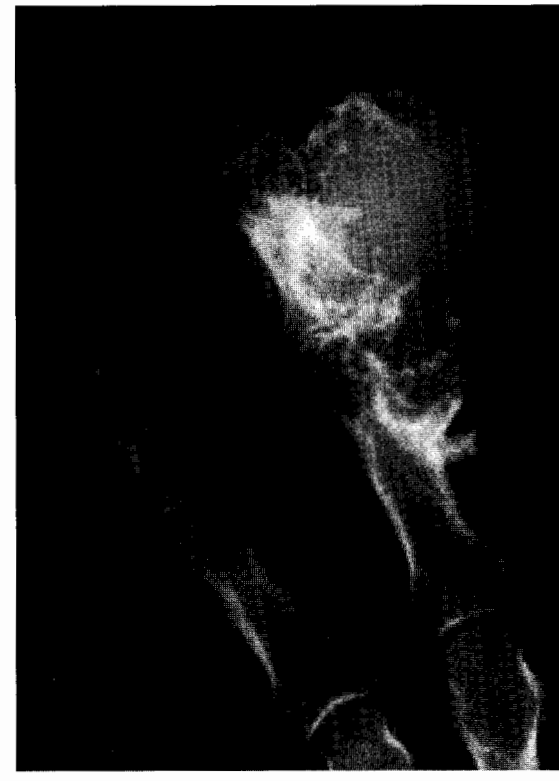

Fig 1 The Rotterdam intrinsic hand myometer.