i-mJOA Methodology

PLOS One

Bryn Hilton[1], Jennifer Tempest-Mitchell[1], Benjamin Davies[1], Mark Kotter[1]

[1]University of Cambridge

dx.doi.org/10.17504/protocols.io.vu5e6y6

Bryn Hilton

ABSTRACT

This protocol was used to retrospectively infer modified Japanese Orthopaedic Association (mJOA) scores in a study conducted in 2016-2017 investigating various features of the diagnostic pathway patients experiencine in Degenerative Cervical Myelopathy (DCM).

EXTERNAL LINK

https://doi.org/10.1371/journal.pone.0207709

THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

Hilton B, Tempest-Mitchell J, Davies B, Kotter M (2018) Assessment of degenerative cervical myelopathy differs between specialists and may influence time to diagnosis and clinical outcomes. PLoS ONE 13(12): e0207709. doi: 10.1371/journal.pone.0207709

PROTOCOL STATUS

Working

Methodology

1 Introduction

The modified Japanese Orthopaedic Association (mJOA) scoring system is well-validated tool used for grading the severity of degenerative cervical myelopathy through a patient questionaire examining 4 domians: upper limb dysfunction, lower limb dysfunction, sensory dysfunction, and urinary dysfunction. For our study, we developed an inferred mJOA scoring system (i-mJOA) that could be used to estimate true mJOA within a small degree of error without having true mJOA scores available. The aim of i-mJOA was to facilitate retrospective disease severity assessment in our centre. It is not intended for general use as a research tool more broadly and would require extensive cross-validation in order to be applied in any other context.

2 Methodology:

1. We developed a conversion chart that translated details in patients' clinical records into mJOA subcategory scores. (Table 1)
2. The true mJOA scores of 13 patients in our centre were collected and their clinical records were anonymised. These patients were outside the time frame used for the study we later applied i-mJOA to and thus did not introduce bias.
3. The mJOA scores of these patients were removed from their records.
4. We applied our conversion criteria to these patients' notes.
5. mJOA and i-mJOA were statisticaly analysed using the kappa statistic. Results below.

3 Results:

Kappa statistical comparison:

Total mJOA vs. Total i-mJOA: 0.73
Upper limb mJOA vs. Upper limb i-mJOA: 0.66
Lower limb mJOA vs. Lower limb i-mJOA: 0.75
Sensory mJOA vs. Sensory i-mJOA: 0.32
Urinary mJOA vs. Urinary i-mJOA: 0.29

Average differnce in category scores (mean +/- standard deviation):

Total mJOA vs. Total i-mJOA: 0.13±1.51
Upper limb mJOA vs. Upper limb i-mJOA: 0.13±0.92
Lower limb mJOA vs. Lower limb i-mJOA: 0.13±0.92
Sensory mJOA vs. Sensory i-mJOA: -0.4±0.74
Urinary mJOA vs. Urinary i-mJOA: 0.27±0.70

4 Table 1.jpg