**Varsani et al, 2013: SUPPLEMENTARY DATA**

**Supplementary Table S1A: The JDM Biopsy Score tool as used**

# JDM BIOPSY SCORE TOOL

Refer to detailed instructions below for definitions

| | | | |
|---|---|---|---|
| Case identifier | | Date scored | |
| Date of Biopsy | | Gender (M/F) | |
| Research code | | Age at biopsy | |

| DOMAIN | Score options | SCORE HERE | NOTES |
|---|---|---|---|
| **INFLAMMATORY DOMAIN** | | | |
| CD3+  endomysial infiltration | 0, 1, 2 | | |
| CD3+  perimysial infiltration | 0, 1, 2 | | |
| CD3+  perivascular infiltration | 0, 1, 2 | | |
| CD68+ endomysial infiltration | 0, 1, 2 | | |
| CD68+ perimysial infiltration | 0, 1, 2 | | |
| CD68+ perivascular infiltration | 0, 1, 2 | | |
| **VASCULAR DOMAIN** | | | |
| Capillary dropout | 0 (N) or 1 (Y) | | |
| Arterial abnormality | 0 (N) or 1 (Y) | | |
| Infarction | 0 (N) or 1 (Y) | | |
| **MUSCLE FIBRE DOMAIN** | | | |
| MHC Class I over- expression | 0 (N) or 1 (Y) | | |
| Perifascicular atrophy | 0, 1, 2 | | |
| Neonatal myosin | 0 or 1 | | |
| Fibre atrophy: non perifascicular | 0 (N) or 1 (Y) | | |
| Regeneration/ Degeneration /Necrosis: peri-fascicular | 0, 1, 2 | | |
| Regeneration/ Degeneration /Necrosis: non-peri-fascicular | 0, 1, 2 | | |
| Internal myonuclei in non-basophilic otherwise normal fibres | 0 or 1 | | |
| **CONNECTIVE TISSUE DOMAIN** | | | |
| Any endomysial fibrosis | 0 (N) or 1 (Y) | | |
| Any perimysial fibrosis | 0 (N) or 1 (Y) | | |

**VISUAL ANALOGUE SCALE - OVERALL IMPRESSION OF ABNORMALITY**

0 _____ 10

no abnormality                                        much abnormality

**Please make a mark on this 10cm line to indicate overall severity from no abnormality to much abnormality; do not write a number.**

**Supplementary Table S1B** Score tool definitions and Instructions

## JDM SEVERITY SCORE TOOL: INSTRUCTIONS for USE

| DOMAIN | Score options | Definitions and Instructions |
|---|---|---|
| CD3+ endomysial infiltration | 0, 1, 2 | For each of endomysial, perimysial, perivascular distributions, score for CD3+ infiltrating cells as follows: if none, or less than 4 cells in x20 field - score 0; if $\geq$4 cells in a x20 field and/or 1 cluster (where a cluster is approx 10 cells or more) - score 1; if $\geq$2 clusters in whole biopsy, and/or diffusely infiltrating cells (ie $\geq$20 cells in a 20x field) - score 2 |
| CD3+ perimysial infiltration | 0, 1, 2 | |
| CD3+ perivascular infiltration | 0, 1, 2 | |
| CD68+ endomysial infiltration | 0, 1, 2 | For each of endomysial, perimysial, perivascular distributions, score for CD68+ infiltrating cells as follows: if none, or less than 4 cells in x20 field - score 0; if $\geq$4 cells in a x20 field and/or 1 cluster (where a cluster is approx 10 cells or more) - score 1; if $\geq$2 clusters in whole biopsy, and/or diffusely infiltrating cells (ie $\geq$20 cells in a 20x field) - score 2 |
| CD68+ perimysial infiltration | 0, 1, 2 | |
| CD68+ perivascular infiltration | 0, 1, 2 | |
| **VASCULAR DOMAIN** | | |
| Capillary dropout (Using immunohistochemistry for CD31) | 0 (N) or 1 (Y) | Obvious and marked decrease in the density of capillary network, not restricted to areas of perifascicular atrophy. Absence – N; Presence – Y |
| Arterial abnormality | 0 (N) or 1 (Y) | Mural thickening and/or endothelial swelling and/or transmural inflammation in arteries/arterioles. Absence – N; Presence – Y |
| Infarction | 0 (N) or 1 (Y) | Well demarcated regional loss of muscle fibre nuclei and loss of normal cytoarchitecture. Absence – N; Presence – Y |
| **MUSCLE FIBRE DOMAIN** | | |
| MHC Class I over- expression | 0 (N) or 1 (Y) | Presence of MHC class I staining on or in muscle fibres. Absence – N; Presence – Y |
| Perifascicular atrophy | 0, 1, 2 | Affecting $\geq$ 6 fibres out of 10 along one edge of a fasciculus, not exclusive to type IIb fibres. Absent - score 0. Present in one or 2 fascicles - score 1. Present in 3 or more fascicles - score 2 |
| Neonatal myosin (using immunohistochemistry for neonatal myosin) | 0 or 1 | Less than 6 positive fibres in a x20 field - score 0; $\geq$ 6 positive fibres in a x20 field - score 1 |
| Fibre atrophy: non-perifascicular | 0 (N) or 1 (Y) | Fibre atrophy: non-perifascicular (outside normal variation for age). Absence – N; Presence – Y |
| Regeneration/ Degeneration /Necrosis: peri-fascicular | 0, 1, 2 | Includes: focal basophilia within a fibre, vacuolation, myofibrillar rarefaction and/or pallor, myophagocytosis, acid phosphatase positive fibres. For each of perifascicular and non-perifascicular, score as follows. None – score 0. If any of the features in 1 or 2 fasciculi score 1. If any of the features in 3 or more fasciculi score 2 |
| Regeneration/ Degeneration /Necrosis: non-peri-fascicular | 0, 1, 2 | |
| Internal myonuclei in non-basophilic otherwise normal fibres | 0 or 1 | Internal myonuclei in non-basophilic cells (in otherwise normal fibres) in 1 or more fasciculi excluding myotendinous junctions. If < 3% fibres - score 0. If $\geq$ 3% fibres - score 1 |
| **CONNECTIVE TISSUE DOMAIN** | | |
| Any endomysial fibrosis | 0 (N) or 1 (Y) | For fibrosis in each of endomysial and perimysial distributions, score as follows: Absence: score N. Presence of any: score Y |
| Any perimysial fibrosis | 0 (N) or 1 (Y) | |

**Supplementary Table S2:** Intra-rater agreement for items of the score tool assessed by proportion of agreement (pA).

| | Proportion of Agreement Median$^*$ (range) |
|---|---|
| **Item name** | |
| **CD3+ endomysial infiltration** | **0.8 (0.5 – 1.0)** |
| **CD3+ perimysial  infiltration** | **0.7 (0.6 – 0.9)** |
| CD3+ perivascular infiltration | 0.8 (0.6 – 1.0) |
| **CD68+ endomysial infiltration** | **0.8 (0.6 – 1.0)** |
| CD68+ perimysial infiltration | 0.8 (0.6 – 0.9) |
| CD68+ perivascular infiltration | 0.6 (0.5 – 0.8) |
| Capillary dropout | 0.8 (0.5 – 1.0) |
| Arterial abnormality | 0.9 (0.5 – 0.9) |
| **Perifascicular atrophy** | **0.8 (0.6 - 1.0)** |
| **Neonatal myosin** | **1.0 (0.8 – 1.0)** |
| Fibre atropy – no-perifascicular | 0.8 (0.5 – 1.0) |
| **Regeneration/degeneration/necrosis: peri-fascicular** | **0.8 (0.5 – 1.0)** |
| Regeneration/degeneration/necrosis: non peri-fascicular | 0.8 (0.4 – 0.9) |
| Internal myonuclei | 0.9 (0.9 – 1.0) |
| Endomysial fibrosis | 0.9 (0.6 – 1.0) |
| Perimysial fibrosis | 0.8 (0.6 – 1.0) |

*median evaluated over 8 scorers. Bold indicates informative items, defined as those which achieved good or good* in original scoring exercise [4] and in both of the 11x11 scoring exercises conducted for this study

**Supplementary Table S3** Correlations between tool items and measures of disease activity Physicians global assessment and childhood myositis assessment score

| Domain & Item | PGA | | CMAS | |
|---|---|---|---|---|
| | r | p-value | r | p-value |
| **INFLAMMATORY DOMAIN** | | | | |
| CD3+ endomysial infiltration* | n/a | 0.02 | n/a | 0.16 |
| CD3+ perimysial infiltration* | n/a | 0.02 | n/a | 0.13 |
| CD68+ endomysial infiltration* | n/a | 0.01 | n/a | 0.05 |
| **Inflammatory Domain total**(modified)** | 0.61 | 0.001 | -0.43 | 0.03 |
| | | | | |
| **MUSCLE FIBRE DOMAIN** | | | | |
| Perifascicular atrophy* | n/a | 0.23 | n/a | 0.15 |
| Neonatal myosin* | n/a | 0.01 | n/a | 0.02 |
| Regeneration/ Degeneration /Necrosis: peri-fascicular* | n/a | 0.03 | n/a | 0.18 |
| **Muscle Fibre Domain total**(modified)** | 0.40 | 0.01 | -0.41 | 0.04 |

* p-value - Kruskall Wallis test, ** p-value - test of independence: r – Spearman's rank correlation coefficient.
n/a – r value not available, since the Kruskall Wallis test does not generate a r value