

## Measuring inflammation in juvenile dermatomyositis

Full title: Quantitative assessment of MRI T2 relaxation time of thigh muscles in juvenile dermatomyositis

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**OBJECTIVE:** The aim of the study was to examine the validity and reliability of a quantifiable measure of inflammation using magnetic resonance imaging (MRI) in children with juvenile dermatomyositis (JDM).

**METHODS:** Children with active JDM, inactive JDM and healthy children received detailed assessments of recognized measures of muscle inflammation including muscle strength (manual muscle testing and myometry) and function (Childhood Myositis Assessment Scale, Childhood Health Assessment Questionnaire), the muscle enzymes lactate dehydrogenase (LDH) and creatine kinase (CK) and T2-weighted MRI scans of the thigh muscles, and these values were correlated with each other.

**RESULTS:** Ten children with active JDM, 10 with inactive JDM and 20 healthy children completed the study. There was no significant difference in ages between the three groups. The MRI T2 relaxation times were significantly increased in active JDM compared with inactive JDM and healthy children ( $P = 0.05$ ), indicating a detectable increase in inflammation within the muscles. There were also good correlations between the MRI scores and the measures of muscle strength and function; however, there was no correlation between the MRI and muscle enzymes.

**CONCLUSIONS:** The MRI T2 relaxation time can be used as a quantitative measure of muscle inflammation and it has good correlations with other measures of disease activity.