



Images in Practice: Multifidus Muscle Dysfunction Characterized by Fat Infiltration in a Patient with Chronic Lumbar Back Pain

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Received: November 22, 2019 / Published online: December 27, 2019
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Keywords: Axial low back pain; Chronic low back pain; Fat infiltration; Multifidus

Key Summary Points

Stability and functional movements of the lumbar spine comes inherently from the utility of the paraspinal muscles, most particularly the lumbar multifidus muscle.

In the setting of chronic lumbar pathology, healthy muscle is replaced with adipose tissue, a marker of weakening.

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Degeneration of the multifidus has been shown to contribute to intractable low back pain.

Further large observational studies may subsequently reveal the true incidence of low back pain in patients noted to have changes of the multifidus muscle evident on radiographic imaging, as well as treatment strategies to reduce and prevent the progression of fat infiltration.

IMAGES IN PRACTICE

Low back pain is one of the most common recurrent complaints in the general population

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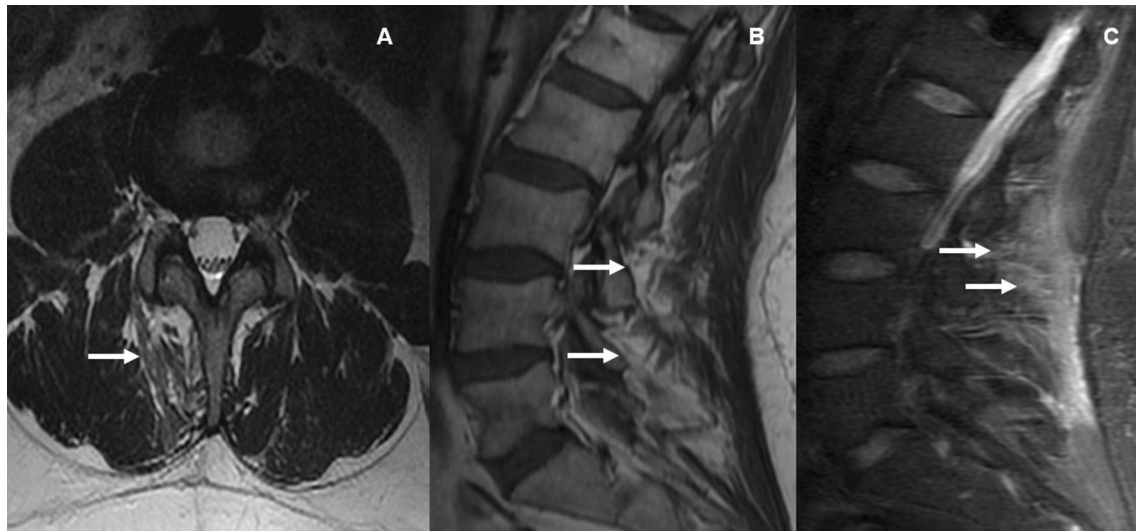


Fig. 1 a Axial T2-weighted magnetic resonance imaging (MRI), which demonstrates fat infiltration of the right multifidus muscle. b, c Sagittal T2-weighted MRI imaging

which demonstrates long segment fatty changes of the right multifidus muscle and diffuse increased STIR signal indicating atrophic muscle

and carries a lifetime prevalence of 65–80% [1]. Stability and functional movements of the lumbar spine comes inherently from the utility of the paraspinal muscles, most particularly the lumbar multifidus muscle. In the setting of chronic lumbar pathology, healthy muscle is replaced with adipose tissue, a marker of weakening. Degeneration of the multifidus has been shown to contribute to intractable low back pain.

These images (Fig. 1a–c) are from a 46-year-old otherwise-healthy patient who presented with chronic intermittent low back pain radiating to the anterior thigh and down the medial calf bilaterally. The patient provided their informed consent to publish this article and all procedures were conducted as part of standard care/treatment. Magnetic resonance imaging (MRI) of the lumbar spine was remarkable for lumbar multifidus muscle atrophy with severe (grade 2) fat infiltration, more significant on the right than on the left (Fig. 1a, b). On short tau inversion recovery (STIR) sequence, there was diffusely increased signal uptake, consistent with atrophic changes within the multifidus muscle (Fig. 1c).

The multifidus muscle represents an essential stabilizer of the lumbar spine. The effect of chronic lumbar pathology on its function has

yet to be determined. Several studies have aimed to correlate the degree of fat infiltration and onset of symptoms with conflicting results that could suggest loss in muscle range of motion as a predictor of elevated pain [2]. In contrast, the relationship between patients with decreased muscle function and development of low back pain could be confounded by other factors including age, gender, duration of disease, and ethnicity [3]. Fatty infiltration in the multifidus muscle is a novel radiographic finding supportive of multifidus dysfunction in the setting of chronic lumbar pathology leading to low back pain. Further large observational studies may subsequently reveal the true incidence of low back pain in patients noted to have changes of the multifidus muscle evident on radiographic imaging, as well as treatment strategies to reduce and prevent the progression of fat infiltration.

ACKNOWLEDGEMENTS

Funding. No funding or sponsorship was received for this study or publication of this article.

Authorship. All named authors meet the International Committee of Medical Journal Editors (ICMJE) criteria for authorship for this article, take responsibility for the integrity of the work as a whole, and have given their approval for this version to be published.

Disclosures. Hisham Kassem, Ivan Urits, Jamal Hasoon, and George Chesteen have nothing to disclose. Alan D. Kaye is a member of the journal's Editorial Board. Omar Viswanath is the Section Editor for Images in Practice.

Compliance with Ethics Guidelines. The patient provided their informed consent to publish article and all procedures were conducted as part of standard care/treatment.

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