

CASE STUDY

CLINICAL CASE: 41-YEAR MAN WITH NEUROLOGICAL SIGNS AND BACK PAIN AFTER PHYSICAL EXERCISES AND UNUSUAL IMAGING APPEARANCES

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ABSTRACT

The aim was to describe the uncommon cause of back pain with successful treatment, precise diagnostic and good outcome. Lower back pain is prevalent among all the age groups and can derive from many potential anatomic sources. Here is presented the case of atypical course of back pain and neurological signs with point on importance of astute visualizations technics. This clinical case of 41-year old male patient who got back pain and neurological signs after intensive physical exercises and had no adequate response for anti-inflammatory and analgesic drugs demonstrated the importance of appropriate visualization and considering non-standard causes of these symptoms. This allowed to prescribe effective treatment with good outcome during follow-up period. This could be the supporting evidence for including such additional visualization in protocols for non-typical back pain after strenuous physical activity. Back pain is common condition with a variety of causes. It is important to consider them in case of inadequate results of treatment and use non-conventional investigation if appropriate, which improves the outcome. This could be the supporting evidence for including such additional visualization in protocols for non-typical back pain after strenuous physical activity.

KEY WORDS: back pain, radiculopathy, teared muscle, m. erector spinae

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INTRODUCTION

Lower back pain (LBP) is prevalent among all the age groups, and the most common risk factors for LBP are physical exercises and stress [1]. LBP symptoms can derive from many potential anatomic sources, such as nerve roots, muscle, fascial structures, bones, joints, intervertebral discs, as well as internal organs [2]. Differential diagnosis is essential for effective treatment of this condition [3], and a physician should consider a lot of causes and take into consideration “red flags”.

This report describes the uncommon cause of back pain with successful treatment, precise diagnostic and good outcome.

CASE REPORT

A 41-year old male patient presented to our outpatient private clinic with complains of back pain which irradiated in his abdomen and numbness in the lower part of his abdominal wall. The symptoms appeared abruptly 5 weeks ago during intensive physical exercises in a gym.

The patient was health before this accident. He had no chronic diseases. He was a top manager and lived with his family in a suburb. He began to go in for sports several years ago and did actively. He also took bioactive dietary supplements.

When the symptoms started he consulted a doctor who prescribed him non-steroidal anti-inflammatory drug (NSAID) and muscle relaxants. Magnetic resonance imaging (MRI) of cervical, thoracic and lumbar spine (see Table 1 and Fig. 1) was performed using GE Optima MR450w1.5T (T1, T2, STIR) due to poor response to treatment, and pregabalin 75 mg was added to the treatment after 3 weeks of therapy). The results of standard analysis (complete blood count, serum chemistry and urinalysis) were normal, including creatine kinase and C-reactive protein.

In our clinic we performed physical and neurological examination. The temperature was 36.5 °C, the pulse 66 beats per minute, the blood pressure 124/85 mm Hg, the respiratory rate 14 breaths per minute. The abdomen was soft and nontender. There were clear heart tones and vesicular breathing. Skin was normal, without any rash.

Neurologic examination: he was conscious and oriented, but anxious. Cranial nerve function was normal. Deep tendon reflexes were 2+ and symmetric throughout. Lower superficial abdominal reflex was slightly decreased on the right. Muscle strength was normal bilaterally. The coordination was normal. Meningeal signs were not detected. The function of the pelvic organs was preserved. Straight leg raise test was negative. The sensation to light touch and pinprick was decreased (patchy) in D11 dermatome. The sensation in other areas was preserved.

Table 1. Results of MRI of cervical, thoracic and lumbar spine

Part of spine	Description
Cervical	Cervical lordosis is straightened. Moderate decrease in height and signal intensity of the intervertebral discs. Elongated angles of vertebral bodies, more pronounced in segments C5-C6, along the dorsal margin with modeling of the dural sac. The spinal cord has usual structure and signal intensity in the visualization area. Spinal canal lumen is normal. Paravertebral soft tissues without visible pathological changes.
Thoracic	Preservation of thoracic kyphosis. The height and signal intensity of the intervertebral discs are reduced unevenly. Erosion of vertebral endplates (Schmorl's nodes) at Th5-Th11. The hernias and protrusions of the discs are not observed. Elongated angles of vertebral bodies, marginal osteophytes with modeling of the dural sac at Th11-Th12. The spinal cord has usual structure and signal intensity in the visualization area. Spinal canal lumen is normal. Paravertebral soft tissues without visible pathological changes.
Lumbar	Lumbar lordosis is straightened. Decrease in height and signal intensity of the intervertebral discs L3-L4, L4-L5, L5-S1. Intraspinous protrusions of intervertebral disk L5-S1 up to 2-3 mm. Hyperintense lesion up to 9 mm in diameter, probably hemangioma, is visualized in the vertebral body L4. Erosion of vertebral endplates (Schmorl's nodes) at L5-S1. Marginal osteophytes with modeling of the dural sac. The terminal part of spinal cord has usual structure and signal intensity in the visualization area. Paravertebral soft tissues without visible pathological changes.

Table 2. Results of non-conventional MRI of thoracic and lumbar muscles

Description	<p>The area of increased STIR signal intensity in the fibers of right m. erector spinae (the medial and lateral tracts) that extend to all the diameter from the anterior edge of the muscle at level Th11 to its posterior edge at level L1 (to thoracolumbar fascia). The hyperintense STIR signal in the fibers of right m. serratus posterior inferior and decreased transverse size of fibers at the point of their attachment to the XII rib compared to the contralateral muscle are visualized. Other back muscles in the lower thoracic and lumbar part had no visible abnormalities.</p> <p>Lumbar lordosis preserved. Vertebral bodies of normal configuration, height and structure, with no change in signal intensity.</p> <p>Th11-Th12 disc protrusion, up to 2 mm, more to the right, with surrounding marginal osteophytes. L5-S1 disc protrusion, up to 2-3 mm.</p> <p>Other intervertebral discs of preserved shape, height and signal intensity.</p> <p>Spinal canal lumen preserved.</p>
Conclusion	MR-picture of teared right m. erector spinae (medial and lateral tracts) and teared right m. serratus posterior inferior.

There were flexor plantar reflexes. Pronounced muscle spasm in lower thoracic and lumbar region was observed on the right side. The movements in the lumbar spine were painful and restricted.

The patient rated his back pain on Visual Analog Scale (VAS) and it was up to 9. The pain became more intensive in sitting position and when lying on the firm surface as well as during physical exercises.

The patient was recommended to increase the dose of pregabalin up to 300 mg per day (150 mg+150 mg) and given advices on general precautions in back pain and life-style. Additional course of NSAID and muscle relaxants was prescribed. The patient's condition at a 2-week follow-up visit was better – VAS pain improved to 2. However, the patient was not fully satisfied with the outcome. He continued to feel pain during his exercises. He also could not tolerate 300 mg of pregabalin because of severe drowsiness and trouble concentrating and took only 150 mg per day. The detailed history taking revealed that he had experienced the feeling as if the “muscle had ruptured” before the pain onset.

Non-conventional MRI (using GE Signa HDxt 1,5 T) was performed with the thorough assessment of muscles in lower thoracic and lumbar regions. The results presented in Table 2 and Fig. 2.

Based on the results of the MRI the patient was referred to rehabilitation orthopedic center where he got 3-week physical therapy and general recommendation on physical activity. He continued to take 75 mg of pregabalin during 2 months. The patient's condition at a 8-week follow-up visit was improved, the pain disappear. The patient complained of slight discomfort in thoracic area and patchy sensory deficits in D11 dermatome on the right.

On the visit 2 year after the event, the patient had no complains. There were no exacerbations during this period. He continued to do sport on a regular basis.

The patient had thoracic pain and neurologic deficit that can be considered a “red flag” for person at this age without obvious causes. It requires thorough workup using appropriate modalities. Inadequate response to treatment is suspicious for possible another reason of the condition or additional circumstances. Usually, patients with acute back pain have decreased cross-sectional area (CSA) of m. psoas major and erector spinae, and chronic back pain causes significant reduction in CSA in multifidus and erector spinae muscles on the painful side compared with the non-painful side [4]. However, in this case the patient had increased STIR signal intensity in the fibers of right m. erector spinae and m. serratus posterior inferior in addition to degenerative disk disease at the thoracic level with



Fig. 1. T2-imaging of cervical (a), thoracic (b) and lumbar (c) spine

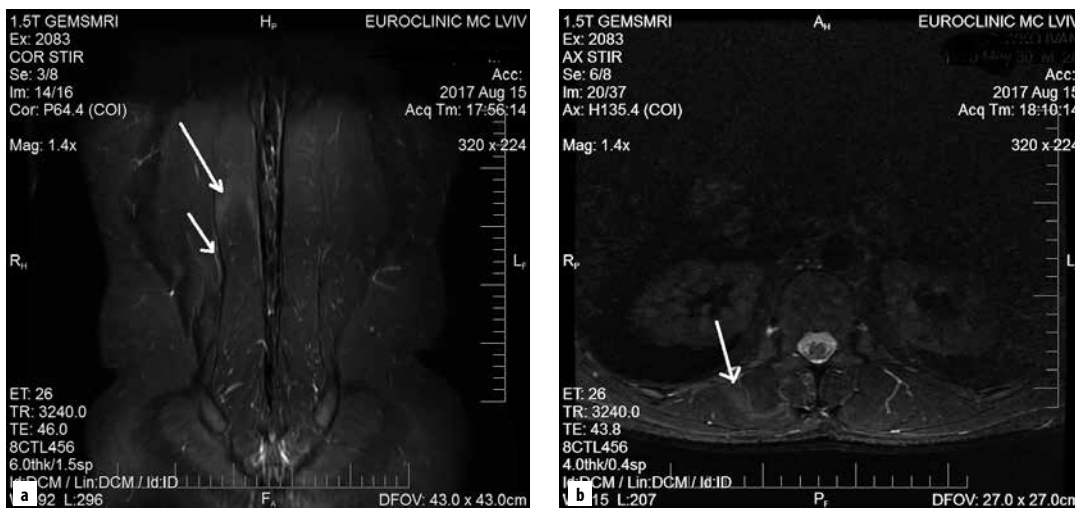


Fig. 2. STIR imaging of teared right m. erector spinae (a) and m. serratus posterior inferior (b) (arrow)

Th11-Th12 disc protrusion which probably resulted in neurological symptoms in D11 dermatome. The precise diagnosis and imaging helped to prescribe the most appropriate treatment for this patient. The pregabalin was helpful for treatment of neuropathic pain in this patient and the most effective was physical therapy and training.

CONCLUSIONS

Back pain is common condition with a variety of causes. It is important to consider them in case of inadequate results of treatment and use non-conventional investigation if appropriate, which improves the outcome. This could be the supporting evidence for including such additional visualization in protocols for non-typical back pain after strenuous physical activity.

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Conflict of interest:

The Authors declare no conflict of interest.

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