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Multidisciplinary management of fibromyalgia and cervicalgia incorporating targeted mesotherapy and nutritional neuromodulation: a clinical case report of a phased approach to overcoming the massage paradox

Aiste Luckute-Berene[1]

[1]*Independent researcher, Klaipeda, Lithuania*

Abstract

Introduction. Fibromyalgia is a chronic nociplastic pain condition driven by central sensitization, characterized by amplified nociceptive processing and impaired descending inhibition. It is commonly associated with a pathophysiological triad of central nervous system hyperexcitability, peripheral metabolic dysfunction, and low-grade systemic inflammation.

Case Presentation. A 48-year-old woman presented with a six-month history of widespread spasmodic pain, non-restorative sleep, cognitive dysfunction, and mild anxiety. Diagnosis was established using 2016 EULAR criteria (Widespread Pain Index: 8; Symptom Severity Scale: 6). Initial management included low-dose amitriptyline, tizanidine, and a nutritional regimen (Silexan, creatine monohydrate, vitamin D3). Systemic symptoms resolved within one month; however, persistent cervical and shoulder pain (VAS 4–5) remained. An eight-session mesotherapy protocol using ketoprofen, lidocaine, and saline was introduced. A key observation was the “massage paradox,” where deep tissue manipulation triggered symptom exacerbation and occipital numbness. Full symptom resolution was achieved after extending mesotherapy to the occipital region and avoiding mechanical stimulation during central stabilization.

Conclusions. This case highlights the importance of prioritizing pharmacological and interventional strategies over mechanical therapies in fibromyalgia patients with central sensitization. Avoidance of nociceptive triggers during early treatment phases may be critical for achieving complete symptom resolution.

Keywords: central sensitization, cervicalgia, fibromyalgia, massage paradox, mesotherapy, nutritional neuromodulation

1. Introduction

Fibromyalgia is classified as a chronic nociplastic pain syndrome characterized by central sensitization, a state where altered neural processing amplifies nociceptive signals while descending endogenous pain inhibition pathways are significantly impaired [1]. Modern diagnostic standards have transitioned from the subjective 1990 tender-point examination to the 2016 comprehensive criteria, which utilize the Widespread Pain Index (WPI) and Symptom Severity Scale (SSS) to provide an objective map of somatic and cognitive distress [1]. The underlying pathophysiology frequently manifests through a triad consisting of a peripheral energy crisis within the musculature, central nervous system (CNS) hyperexcitability, and systemic inflammation.

Exogenous creatine monohydrate acts as a critical intracellular energy buffer to reverse peripheral metabolic exhaustion by rapidly replenishing adenosine triphosphate reserves, which clinical evidence indicates can increase intramuscular phosphocreatine by 80% over sixteen weeks [2]. CNS hyperexcitability is addressed through Silexan, a standardized Lavandula angustifolia oil extract that inhibits presynaptic voltage-gated calcium channels to suppress the release of glutamate and substance P while inducing neuroplasticity via the CREB transcription factor [3]. Furthermore, optimizing Vitamin D levels manages the systemic immunomodulatory component, as serum concentrations are inversely correlated with the production of pro-inflammatory cytokines [4].

The European Alliance of Associations for Rheumatology (EULAR) guidelines emphasize a stepwise multidisciplinary model, yet severe localized pain often acts as a clinical barrier to the foundational recommendation of physical rehabilitation. Interventional mesotherapy serves as an essential bridge in these instances by creating a superficial micro-depot of medication to interrupt the localized pain-spasm-ischemia cycle common in structural pathologies [5]. In centrally sensitized states, premature mechanical manipulation can act as a noxious stimulus rather than a therapeutic one—a phenomenon termed the "massage paradox"—necessitating a phased approach where pharmacological and interventional stabilization strictly precede physical therapies.

This case report demonstrates the successful integration of these modalities to manage treatment-resistant fibromyalgia and highlights the adverse effects of premature mechanical manipulation.

2. Case Presentation

A 48-year-old female (all identifiable data have been anonymized) patient presented with a six-month history of widespread, exhausting pain. She described a pressing and squeezing pain localized to the neck, shoulder girdles, interscapular region, and lower back. She also reported spasmodic pain under the right costal arch which when started, spread through the whole body, and migrating tingling sensations in the thighs, frequent headache. Her pain intensity fluctuated from a morning VAS of four to a peak of seven in the evenings after computer-based work. Stress and physical activity were primary triggers, and she noted that therapeutic massages, which she previously enjoyed, now exacerbated her condition. Systemic symptoms included severe sleep fragmentation, profound daytime fatigue, and cognitive dysfunction known as "fibro-fog" that impacted her professional and personal relationships because of which she felt mild anxiety. Her medical history was notable for a cholecystectomy done around three years ago.

Diagnostic imaging revealed some structural changes. An abdominal ultrasound showed hepatosteatosis, while the gallbladder was absent and the pancreas and kidneys appeared normal. A

lumbar magnetic resonance imaging (MRI) scan from six months ago identified flattened lordosis, L4/L5 left foraminal extrusion causing narrowing, and L5/S1 bulging alongside facet joint with osteochondrosis. A cervical radiograph from a year ago confirmed stage II-III intervertebral osteochondrosis and stage II spondylarthrosis. Laboratory panels, including a complete blood count, C-reactive protein, erythrocyte sedimentation rate, thyroid-stimulating hormone, rheumatoid factor, and uric acid, were all within normal limits.

Physical examination revealed diffuse paravertebral tenderness, muscle indurations in the shoulder girdle without active trigger points. Spinal range of motion was moderately restricted, and the patient exhibited rapid fatigue and a notable lack of muscular endurance. Almost all joints were sensitive to palpation. Diagnosis followed the 2016 EULAR criteria: WPI was calculated at eight and SSS was six (fatigue: one; non-restorative sleep: two; cognitive dysfunction: two; extra somatic symptoms: one). The clinical diagnosis was established as fibromyalgia with central sensitization and secondary cervicalgia.

Due to the severity of the pain, the patient initially refused physical rehabilitation. A systemic neuromodulation protocol was initiated: 5 mg of amitriptyline nightly for sleep; tizanidine (2 mg morning, 4 mg evening) for muscle tension; Silexan 80 mg twice daily for anxiety; creatine monohydrate 5 g daily for peripheral energy support; and Vitamin D (50 mcg) as prophylaxis because current serum vitamin D levels were unknown. At the one-month follow-up, systemic symptoms such as sleep architecture, anxiety, and widespread pain had resolved. However, localized neck and shoulder stiffness persisted at a VAS of four to five. Tizanidine was discontinued as ineffective, and weekly sessions of mesotherapy course was initiated using a 10 ml mixture of 2 ml of ketoprofen 100 mg, 2 ml of lidocaine 40 mg, and 6 ml of 0.9% NaCl and administered with a 30G 4 mm needle.

During the first two sessions, the patient achieved an 80-100% reduction in stiffness. However, after the second session, she independently sought a deep tissue massage, which triggered a severe pain relapse and acute neck stiffness. This phenomenon, termed the "massage paradox," recurred after the third session when a second massage caused pain to radiate into the occipital region and induced nocturnal occipital numbness. The mesotherapy protocol was expanded to include the occipital region during the fourth and fifth sessions, which successfully neutralized the radiating tension. By the sixth session, cervical pain was permanently eliminated, allowing the patient to finally initiate active kinesiotherapy. The final two sessions served as a maintenance course, all clinical symptomatology had fully resolved with an excellent treatment response.

3. Discussion

The defining clinical insight of this case is the observation of the "massage paradox" within the context of central sensitization. While mechanical manipulation is a conventional therapeutic approach for musculoskeletal tension, this patient's adverse reactions demonstrate that in a nociplastic pain state, such stimuli can paradoxically act as noxious triggers. This phenomenon is driven by the hyper-excitability of ascending pain pathways and the failure of descending inhibitory mechanisms characteristic of fibromyalgia. The severe nociceptive relapses and new-onset occipital numbness experienced by the patient after her independent massage sessions confirm that premature mechanical irritation can exacerbate central hyperexcitability rather than alleviate localized muscle ischemia.

The successful resolution of symptoms in this case validates the necessity of a phased, multidisciplinary protocol. By prioritizing systemic stabilization in the first phase, the treatment addressed the underlying somatic anxiety and sleep fragmentation that frequently impede recovery. The clinical efficacy of the nutritional triad - creatine monohydrate, Silexan, and Vitamin D - provided the systemic foundation required to transition the patient from a state of total rehabilitation refusal to one where localized intervention was possible.

Mesotherapy served as a critical interventional bridge between pharmacological stabilization and active physical therapy. While systemic medications successfully eliminated widespread pain, the persistent localized cervicalgia required a targeted approach to break the "pain-spasm-ischemia" cycle. The use of a micro-injection technique provided a sustained analgesic effect while bypassing the risks of systemic toxicity associated with prolonged oral non-steroidal anti-inflammatory drug use [6-7]. The expansion of the protocol to the occipital region was particularly effective in neutralizing the migrating symptoms provoked by the "massage paradox," providing the seven-day window of relief necessary for the patient to eventually engage in active kinesiotherapy.

The outcomes of this case suggest that clinicians should adopt a sequential strategy when managing centrally sensitized patients. The transition to active rehabilitation, which holds the strongest recommendation in the EULAR guidelines, is often only achievable once the patient's "therapeutic window" has been opened through a combination of systemic neuromodulation and localized stabilization. This case underscores that for treatment-resistant fibromyalgia, the timing of physical interventions is as critical as the choice of therapy itself.

4. Conclusions

Effective management of fibromyalgia and concurrent cervicalgia requires a multimodal strategy targeting underlying nociplastic mechanisms rather than isolated symptoms. This case highlights the "massage paradox," where mechanical stimulation acts as a noxious trigger due to central sensitization. A sequential approach prioritizing systemic neuro-immunomodulation and localized interventional stabilization is essential before introducing active physical rehabilitation. By stabilizing the central nervous system first, clinicians can create a therapeutic window that prevents symptom exacerbation and facilitates a successful transition to kinesiotherapy.

Conflict of Interest

The authors declare no conflict of interest.

Additional Information Ethics Statement

All patient data presented in this case report have been fully anonymized, and no identifiable personal information is included. Dates, demographic details, and clinical context have been generalized to ensure patient confidentiality. According to local institutional policies and applicable regulations, ethical review and approval were not required for a single case report with fully anonymized data. Informed consent was not obtained as no identifiable information is disclosed, and all reasonable measures have been taken to protect patient privacy in accordance with established publication ethics guidelines.

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