



Original article

Value of Mesotherapy in Treatment of Fibromyalgia

Soha Senara <sup>a</sup>, Marwa Tantawy <sup>b</sup>, Wafaa Abdel Wahed <sup>c</sup>, Hossam Marouf Fathy <sup>b</sup>

*a Rheumatology Department, Faculty of Medicine, Fayoum University, Fayoum, Egypt*

*b Rheumatology Department,, Faculty of Medicine, Beni-Suef University, Egypt*

*c Public Health and Community Department, Faculty of Medicine, Fayoum University, Fayoum, Egypt*

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Abstract

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**Corresponding Author:**

Marwa Tantawy

[tantawy.marwa@yahoo.com](mailto:tantawy.marwa@yahoo.com)

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questionnaire (FIQ).

**Aim:** To evaluate the potential benefit of mesotherapy in the treatment of tender points in fibromyalgia (FM) patients in terms of improving functional ability and quality of life. **Methods:** The American College of Rheumatology's 2016 criteria were met by sixty Primary FM patients who were enrolled in this study. They were divided randomly into two groups in accordance with the program that was given. Group I: 30 patients received: ketoprofen 150 mg /day for two weeks orally and then on demand + methylprednisolone (MP) 40 mg/weeks for the first 4 weeks intramuscularly, then 40mg/2weeks for another month, +esomeprazole 20 mg/day for the study period (two months). Group II: 30 patients received mesotherapy injections in the most painful tender points: 2% lidocaine (1 mL) + ketoprofen 100 mg (2 mL) + MP 40 mg (1 mL) every week for the first month, then every 2 weeks the second month. Patients' pain severity, quality of life and depression will be assessed using visual analogue scale (VAS), fibromyalgia impact questionnaire

(FIQ) before and after treatment then data were recorded and compared. **Results:** We found significant improvements ( $p < 0.001$ ) tender points number in the injection mesotherapy group compared to the control group with no significant improvement in VAS and FIQ scales between the two groups. **Conclusion:** This study supports the idea that injection mesotherapy may represent an effective technique to treat fibromyalgia tender points, especially when there is a high risk of drug interactions, polypharmacy, or when traditional (oral or parenteral) NSAIDs can't be used.

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## **1. Introduction:**

Fibromyalgia is a persistent musculoskeletal pain syndrome with symptoms like stiffness, sleeplessness, mood disorders, and daily activity limitations [1]. Fibromyalgia may also be associated with infections, psychological or neurological disorders [2].

Furthermore, vitamin D levels were noticeably diminished in RA patients with FM [3]. Fifty years ago, French physician Michel Pistor proposed mesotherapy in many rheumatologic diseases as a revolutionary pain-relieving remedy [4]. Mesotherapy is a local intradermal technique that delivers medications deep within the skin. The tiny deposit that is created by drugs in the dermis allows them to slowly diffuse into the tissues beneath it [5].

With this method, a systemic route drug-sparing benefit is obtained with a reduced total medication dose [6]. Different types of localized pain have been treated with mesotherapy to help with pain relief and quality of life enhancement [7]. Regardless of the mesotherapy strategy, it may be beneficial in musculoskeletal pain alleviation and functional improvement, and it could give patients early access to rehabilitation, improving their quality of life while also reducing their suffering [8]. For instance, the short-term management of neck pain was successfully accomplished by combining mesotherapy and drug combinations. Antalgic mesotherapy enhances pain remission and functional recovery [9].

This rehabilitation strategy is recommended for mild, localized musculoskeletal pain syndrome individuals,

such as those with regional spine pain [10], who benefit from targeted therapy and reduced drug use [11]. The present research was planned to appraise mesotherapy's potential benefits in treating fibromyalgia (FM) tender points.

## **2. Patients and Methods:**

Out of 74 patients at the beginning of this research, 12 patients who received systemic therapy and two who received mesotherapy withdrew after a while for fear of steroid medication (steroid phobia), and only 60 patients were the ones who completed it. The 60 primary FM patients included in this study satisfied the American College of Rheumatology's 2016 guidelines [12].

They were recruited from the Beni Suef University hospitals' inpatient and outpatient rheumatology, rehabilitation, and physical medicine departments between October 2022 and March 2023. Concerns with ethics Every participant gave their written consent before the trial. The Beni Suef University School of Medicine's Ethical Medical Committee gave this work their blessing.

### **Exclusion criteria:**

1. a history of major psychiatric, digestive, cardiovascular, renal, or hepatic conditions
2. Nursing or being pregnant
3. A known bleeding disorder

4. An allergy to any of the prescribed or administered medications .
5. Those patients who are under 18 years. In accordance with the prescribed program, patients were divided into two groups at random. Group I: 30 participants received the following pharmaceutical therapy regimen: ketoprofen 150 mg/day for two weeks orally and then on-demand + methylprednisolone (MP) 40 mg/week for the first 4 weeks intramuscularly, then 40mg/2 weeks for another month + esomeprazole 20 mg/day for the study period (two months). Group II: The most painful tender areas will be injected with mesotherapy on 30 individuals: 2% lidocaine (1 mL), 100 mg of ketoprofen (2 mL), and 40 mg of MP every week for the first month, then every 2 weeks for the second month. Using a 5 cc syringe and a specific needle placed at a 30 to 45degree angle, one intradermal injection was administered to each painful spot. Following the injection, patients were monitored for a few hours to look for any negative side effects. Using a visual analogue scale (VAS), the patient's pain intensity and quality of life were evaluated. Before and after therapy, the Fibromyalgia Impact Questionnaire (FIQ) data were recorded and compared. It took about 5 minutes to complete the FIQ, which is a simple scoring test. Ten items make up the FIQ. The first item consists of 11 physical

functioning-related questions; everyone is scored on a 4-point Likert scale. In items 2 and 3, the patient was asked to prescribe how many days they experienced good health and prescribe how many days their fibromyalgia symptoms prevented them from working or performing other household duties. Items 4 through 10 are horizontal linear scales with 10-point increments on which the patient was asked to rate work difficulties, discomfort, exhaustion, morning fatigue, rigidity, anxiety, and depression [13].

#### **Statistical analysis:**

The statistical software regarding social science (SPSS) Version 20 was used (Chicago, Illinois, USA). Mean and standard deviation were produced as descriptive statistics for the data. To compare the means of two groups of quantitative data that were parametric and non-parametric, respectively, Student's t-test and Mann-Whitney test were used. Comparing the means of variables over many time periods in quantitative data that is

parametric and non-parametric, respectively, is done using the paired t test and the Wilcoxon test.

### **3. Results:**

The following was included in this study: Group I (systemic therapy group): 30 patients (25 females and 5 males) with ages ranging from 19 to 53 years, with a mean  $\pm$  SD ( $35.66 \pm 9.918$ ). Their illness ranged in duration from 8 months to 11 years, with a mean  $\pm$  SD ( $3.35 \pm 2.65$ ) years. Group II (mesotherapy group): 30 patients (26 females and 4 males) with ages ranging from 18 to 54 years, with a mean  $\pm$  SD ( $35.47 \pm 9.92$ ). Their illness ranged in duration from 9 months to 11 years, with a mean  $\pm$  SD ( $3.53 \pm 1.912$ ) years. As regards age, sex, and other demographic data, nothing between the two groups differed significantly. When comparing the FM Symptom Scale (FS), there was no difference between group I and group II **Table (1)**.

**Table (1) Comparison of the demographic characteristics and fibromyalgia symptom scale (FS) between Group I and Group II:**

		Group I	Group II	P value
Age	Mean±SD	35.66±9.918	35.47±9.92	0.938
Disease duration	Mean ±SD	3.35 ±2.65	3.53±1.912	0.760
Sex	F	25 83.3%	26 86.7%	0.718
	M	5 16.7%	4 13.3%	
Residence	Urban	24 80.0%	24 80.0%	>0.99
	Rural	6 20.0%	6 20.0%	
Education	illiterate	5 16.7%	3 10.0%	0.448
	educated	25 83.3%	27 90.0%	
Marital status	Single	7 23.3%	4 13.3%	0.633
	Married	17 56.7%	19 63.3%	
	Widow\divorced	6 20%	6 20%	
Fs	Mean ±SD	18.00 ± 2.348	17.33 ± 1.953	0.237

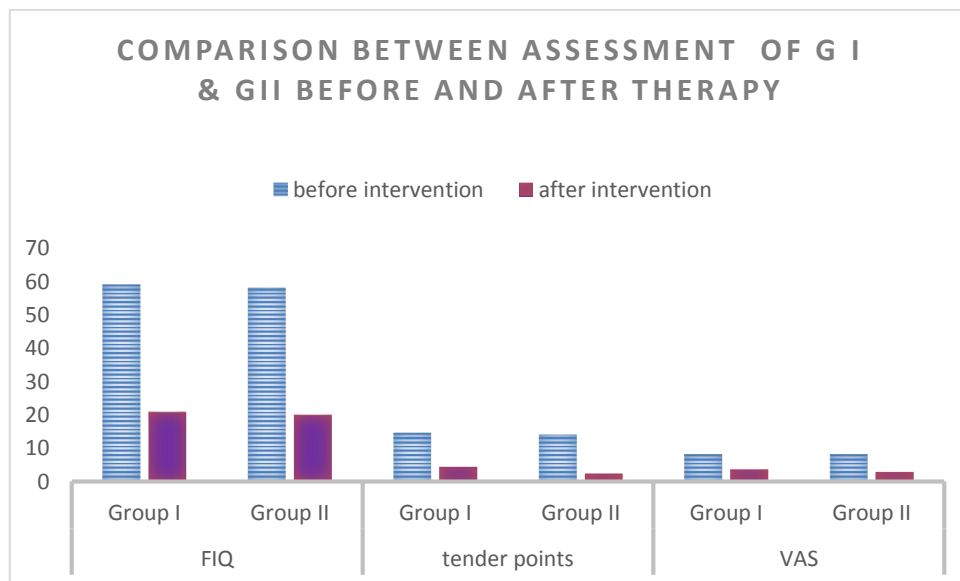
*FM Symptom scale (FS)*

Regarding the frequency of fibromyalgia tender spots, there were significant decline in number in group II than groups I ( $P < 0.01$ ). The VAS and FIQ before and after therapy showed no significant difference between both groups as shown in **Tables (2) and Figure (1)**.

**Table (2): Comparisons between both groups considering the total number of tender spots of fibromyalgia, the VAS score the fibromyalgia impact questionnaire (FIQ) before and after therapy:**

		Before therapy			After therapy		
		Mean	SD	P value	Mean	SD	P value
tender points	Group I	14.700	2.3216	.315	4.433	1.8323	<0.001*
	Group II	14.133	1.9954		2.367	.7184	
VAS	Group I	8.233	.7279	.710	3.667	1.6678	.077
	Group II	8.300	.6513		2.833	1.9134	
FIQ	Group I	59.22	4.701	.393	20.867	9.1566	.668
	Group II	58.21	3.966		19.967	6.8556	

FIQ, the fibromyalgia impact questionnaire; VAS, visual analogue scale.



**Figure (1): Comparison between assessment of two groups before and after therapy regarding FIQ, tender point and VAS.**

There was no significant difference between group I and group II as regard laboratory parameters before and after therapy **Table (3)**.

**Table (3): Comparisons between both groups regarding laboratory parameters:**

		Before intervention			After intervention		
		Mean	SD	P value	Mean	SD	P value
Hb	Group I	11.760	1.0549	0.458	11.617	1.0790	.845
	Group II	11.963	1.0542		11.673	1.1522	
TLC	Group I	6.040	1.6658	719	6.040	2.9710	.636
	Group II	5.883	1.6952		5.700	2.5549	
PLT	Group I	313.433	86.6498	0.583	363.133	61.2393	.930
	Group II	322.700	88.2771		364.600	67.1964	
ESR	Group I	17.700	4.8789	.784	11.100	4.0544	.553
	Group II	17.333	5.4097		10.500	3.7301	
ALT	Group I	27.133	10.8746	.942	25.267	5.4198	.979
	Group II	27.333	10.2262		25.233	4.4465	
AST	Group I	25.233	4.8472	658	23.167	3.3227	.908
	Group II	26.300	5.1337		23.267	3.3829	
Urea	Group I	36.600	5.6483	.644	36.033	5.7264	.871
	Group II	37.267	5.4768		35.800	5.3460	
Cr.	Group I	.9303	.11282	0.523	.9160	.12533	0.738
	Group II	.9483	.10383		.9267	.12015	
CRP	Group I	6.000	3.2002	.828	3.983	1.2964	.464
	Group II	6.183	3.2944		3.783	.7273	

Hb; hemoglobin TLC; Total leucocytic count ESR; Erythrocyte sedimentation rate PLT; Platelet count ALT; alanine transaminase CRP; C Reactive protein AST; aspartate aminotransferase.

There was no significant difference between group I and group II as regards the occurrence of side effects after therapy except a mild increase in blood pressure and fasting blood glucose in group I (group of systemic therapy) and non-obvious association with skin discoloration in the mesotherapy

group (group II) **Table (4)**. A significant link between group I and GIT upset as a side effect of systemic therapy.

**Table (4): Comparison between both groups regarding the occurrence of side effects after therapy:**

		Before intervention		P value	After intervention		P value
		Group I	Group II		Group I	Group II	
Skin pigmentation	N	0	0		0	3	0.236
	%	0	0		0	10.0%	
GIT upset	N	6	5	0.739	17	7	0.008*
	%	20.0%	16.6%		56.7%	23.3%	
BP	n	0	0		6	3	0.99
	%	0	0		20.0%	10.0%	
FBG	n	0	0		5	2	0.424
	%	0	0		16.7%	6.7%	

#### 4. Discussion:

FM syndrome is a complex condition with many distress and symptoms [13]. It has a detrimental impact on quality of life but does not yet have any identifiable symptoms, imaging, or laboratory findings. [14]. Apoptosis was discovered to be involved in FM [15]. The increasing prevalence of adverse effects associated with NSAIDs has led to the widespread use of "alternative" therapies [16].

Mesotherapy is a promising viable treatment option for alleviating pain in fibromyalgia [17]. The significant benefit provided by mesotherapy is the little quantity of medicine

utilized in comparison to the dose necessary in traditional methods of administration; also, therapeutic activity is "targeted," which implies it addresses the localized body painful area [18]. In our study, statistically significant variations were detected ( $P < 0.01$ ) between groups I and II in terms of the frequency of fibromyalgia tender points. Our findings corroborate those of Bárbara et al [19] who injected lidocaine 2% intradermal drug in FM patients, achieving a satisfactory therapeutic effect, reducing painful points, stockings, and functional inability after 6 sessions.



This is due to the fact that the cutaneous and subcutaneous receptors are activated by the needle inserted at the painful spot (reflex arc), and increases endorphin levels [20].

Eltanawy et al [21] realized significant enhancements ( $p < 0.001$ ) in tender points number, pain severity, and life quality as measured by the two scales (VAS), and (FIQ) only in the mesotherapy-treated group. Our findings coincide with those of Eltanawy et al in terms of tender point number improvement, however, we differ in our study since we found no correlation between (VAS) and (FIQ) compared to the systemic treatment group in the mesotherapy group. This can be explained by the fewer patients in Eltanawy et al study (Two therapy groups were randomly assigned to 30 fibromyalgia patients). while in our study was 60 patients divided into 2 groups) and also may be due to the use of different therapy medications and duration (in our study Group I: had received ketoprofen 150 mg /day for two weeks orally and then on-demand + methylprednisolone (MP) 40 mg/week for the first 4 weeks intramuscularly, then 40mg/2weeks for another month, +esomeprazole 20 mg/day for the study period (two months). Group II: had received mesotherapy injections in the most painful tender points: 2% lidocaine (1 mL), 100 mg of ketoprofen (2 mL), and 40 mg of MP every week for the first month, then every 2 weeks the second month while in their study the

injection mesotherapy group (Group I had received a weekly treatment of 2 ml of Ketoprofen (100 mg/2 ml) mixed with 3 ml of saline solution for a total of 6 weeks. and (Group II) had been given once-daily Ketoprofen 100 mg Extended-Release pills for two weeks. Due to the lack of research on mesotherapy as a fibromyalgia therapeutic option, we correlated our findings to those of other chronic musculoskeletal disorders those researchers employed different mesotherapy mixtures to demonstrate its usefulness in treating chronic pain. Our findings match those of IklerdAkbas et al. [22] who explored the intradermal mesotherapy efficiency in treating low back pain using NSAIDs, thiocolchicoside, and lidocaine. They found that this approach produced superior clinical outcomes (pain relief) than utilizing systemic medications. According to their findings, mesotherapy is more successful in relieving pain than systemic NSAID administration because its effects start acting more quickly and last longer. Viscito et al. [23] compared a mesotherapy with a normal saline solution versus a drug mixture (normal saline solution, lidocaine hydrochloride, and lysine acetylsalicylate) in cervicalgia patients with spondyloarthritis. Both groups demonstrated transient reductions in discomfort and incapacity at work. Only participants receiving a combination of medications benefited three months later. In addition, Ferrara et al. [24] compared the

mesotherapy's immediate- and long-term consequences with drug combinations (2% lidocaine hydrochloride, 0.5 mL of lysine acetylsalicylate, and 1 mL of saline solution) to regular saline in the treatment of people with persistent back pain. Both groups improved after therapy, but after follow-up for 3 months, patients treated with the drug combination had substantially greater improvement than those treated with saline. Mesotherapy's efficiency in treating rotator cuff tendinopathy was shown by utilizing a combination of Procaine, a coumarin derivative, NSAID and occasionally a vasodilator. According to the findings, 80.7% of participants reported significant pain relief and enhanced mobility [25].

Disodium EDTA delivered by mesotherapy was utilized as a physiotherapy remedy for shoulder calcific tendinitis because it was effective and safe at reducing pain and removing calcifications [26]. Different mesotherapy combinations were used by Chen et al. [27] and Saggini et al. [28] to treat patients with pes anserine bursitis and knee osteoarthritis respectively, and observed pain and function improvements. However, 84 patients with severe backache were treated with either intramuscular or oral NSAIDs and corticosteroids (n=42) or mesotherapy with the same drugs (n=42), results showed that both groups improved, with no discernible difference between them in terms of subjective

pain reduction (as determined by VAS) [29]. In our investigation, we identified certain adverse reactions of mesotherapy injections in the form of pain, bruising, redness, and edema. These results agree with those of other studies [30, 31], which found that injection site side effects from deoxycholic acid injected subcutaneously for submental fat reduction. These side effects were transient and went away on their own without the need for further treatment.

### **5. Conclusion and recommendation:**

This study lends credence to the notion that injectable mesotherapy may be an efficient therapy for fibromyalgia tender points, particularly when drug interaction risk is present, multi-drug use or when traditional NSAIDs can't be used. We recommend utilizing various cocktail solutions for mesotherapy to demonstrate the technique's usefulness in treating other rheumatic conditions. The limited sample size and the inability to compare mesotherapy to other forms of FM treatment are, however, limitations of our research.

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