



EFFECT OF INTERFERENTIAL THERAPY AND MYOFASCIAL RELEASE IN FIBROMYALGIA-A CASE STUDY

Physiotherapy

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ABSTRACT

A 58-year-old woman with poor well-being and living with symptoms of severe chronic pain, mood swings, insomnia, depression, poor social life, poor autonomic function, negative thoughts, water retention has reported for the restoration of normal life. The patient was provisionally diagnosed with persistent depressive disorder. Patient was on pharmacological intervention from last twenty-five years and on regular medications including serotonin reuptake inhibitors (SSRI's) and Triazolam for treating Insomnia. The patient was admitted in a psychiatric unit for one month of treatment and underwent cognitive behavior therapy along with pharmacological interventions. Due to lack of effectiveness of these medications, the patient became more aggressive and complains of low self-esteem and severe insomnia. She finally approached a physical therapy centre with the complains of severe fatigue and pain at different body sites. She was examined by the physical therapist, complete medical history, general assessment, physical examination was conducted. Patient was initially diagnosed with Generalized body aches but after few days of treatment and regular visits and in patient discussions, she was diagnosed with fibromyalgia. The Visual Analogue Scale (VAS) was recorded to be 9 at the scale of 10, Pain pressure threshold (PPT) assessed with Digital algometer was 6.76 KPA and having trigger points at almost 13 different bodily sites. The Erythrocyte Segmentation rate was also reported higher than the normal limits. The patient was initially treated with Interferential therapy to release the inflammation later followed by Myofascial Release Techniques (MRT) and generalized exercises were advised to be done at home by the patient herself. This treatment was given for one month regularly, later followed by three days per week for another two months respectively. The patient has responded well to this treatment and there were marked improvement in the symptoms. The significant change was noticed in chronic pain, mood swings, social activities, and inflammation and indirect improvement was observed in insomnia, and negative thoughts. The patient was advised to follow the exercise regimen at home for another three months and should visit the clinic for regular follow ups fortnightly. This six-month patient centric approach helped in restoration of the well-being of a patient and presented as the final cure of fibromyalgia. The patient was also guided to report back to the clinic if notice any prevailing symptoms. A further study has been proposed and planned to treat the patients with similar symptoms of chronic and widespread pain indicative of fibromyalgia. The same protocol can be followed and to check the efficacy and to mask the effect of this therapeutic approach among similar patients. The efficacy in protocol can help to evaluate the condition and would help designing the clinical management of Fibromyalgia syndrome (FMS)

KEYWORDS

Fibromyalgia, Chronic Pain, Insomnia, Depression, Serotonin, Interferential therapy, Myofascial release

INTRODUCTION

Fibromyalgia (FM) is a chronic disorder including symptoms of myalgia, generalized pain, fatigue, mood issues, and depression and attention deficits that affect one's activity of daily living. A standard research-based criteria has been designed by American College of Rheumatology in 1990 for the diagnostics of Fibromyalgia (1-2). FM is more predominant in women in the most fertile age group. Fibromyalgia is predominantly seen in females than in male population (3). A few people may likely to develop other symptoms such as anxiety, depression, hormonal imbalance and dysmenorrhoea in female, gastroesophageal reflux disease, dry mouth, tachycardia, myalgia, paresthesia, and weight gain. In medical care centre and hospital settings there are few patients with clinical presentation of fibromyalgia, while in other non-rheumatology settings like physiotherapy clinics, the reporting of this condition is very rare. Increased sensitivity is reported in the individuals with this diagnosis and they also complain of adverse side effects of medications recommended by the medical experts. Therefore, the management of this underdiagnosed condition seek immediate attention and treatment with shortest possible recovery as regular sittings with the doctor affects the patient's mental, physical, and economic status, leading them into stress, attention deficits and sleep disorders. (4). While understanding the fact, that fibromyalgia remains undiagnosed and treatment is still not clear in all the areas of healthcare (5). To work on this limitation many research papers have been reviewed to check for different treatment options available for this problem. This study will provide a broader aspect of treatment approach to treat the clinical manifestations related with fibromyalgia, it may be pharmacological and non-pharmacological or combination of the two (6). Finally, it will further help us to decide on the evaluation of patients with related symptoms and to make differential diagnosis so that the appropriate treatment can be delivered to the patients without giving any adverse reactions and preventing the financial burden, thus some symptoms like stress, attention deficits, depression, and sleep disorders can be

treated by their own as per pathophysiology of all these symptoms. Etiopathogenesis of Fibromyalgia is still unknown and its symptoms are common to that of conditions like muscle spasm, arthritis which affects the other body parts which make it difficult to categorize it into specific group of disorders. Although the aetiology and pathogenesis of fibromyalgia are still a point of discussion, it has been considered that mental stress or other psychological conditions like depression and insomnia plays a very important role in diagnosing fibromyalgia (7). In early nineties, Fibromyalgia was named as fibrositis, which is an inflammatory condition, later it was named as fibromyalgia because of the presence of symptoms like muscle pain in the individuals suffering from this medical ailment. It has commonly seen that fibromyalgia consists of typical features of stress, mental tension, depression, and anxiety. It has been also observed that these presenting psychological symptoms are the manifestations of fibromyalgia which increases to higher level when patients underwent pharmacological interventions (8). Many theories have been evolved to describe the Etiopathogenesis of fibromyalgia but the actual cause remain idiopathic. Most of the research studies have concluded that the pain associated in this condition is due to the injury to soft tissues like muscles most commonly. To confirm this, muscle studies in the form of muscle biopsies have been conducted, which were of very less significance or no value (9).

Researchers infer that fibromyalgia increases the noxious sensations by disturbing the pathway of brain processes the pain signals. The irregularity during serotonin and epinephrine has been considered among one of the likely causes to have fibromyalgia as the treatment with tricyclic antidepressants and SSRI's have shown very good results in the recovery of this condition (10). The actual interaction of these drugs and the role of SSRI's is still not considered as the main cause behind fibromyalgia. The anomalies in the brain signals inhibits the basting of sensory pain impulses, leading to increased sensitivity of pain. The increased value of Substance P which is pain modulator can

also further enhance the sensitivity towards pain in individual's suffering from fibromyalgia. But the electrochemical studies have proven it wrong that is no relationship between release of substance P and pain intensity of the patients (11). Another study suggested that autoimmune response can also be the root cause for fibromyalgia where the presence of Interleukin 2 and cytokines confirms the diagnosis (12). Further futuristic studies have been proposed to find out the presence of these Interleukin 2 and cytokines are the present before the beginning of the symptoms of fibromyalgia or it has been noticed later on during the course of the disease. In some papers it has been mentioned that the sleep pattern of the patients with fibromyalgia the abnormal alpha and delta sleep activities were recorded as checked on EEG studies (12) some findings have suggested that with following some set of aerobic exercises the sleep abnormalities can be dealt with an ease which throw a light on the fact that changing sleep patterns can be a possible reason behind fibromyalgia (13). Few studies have revealed some abnormal neuroendocrine levels in fibromyalgia patients. The implication of all these findings is still unclear and cannot be the possible root cause of fibromyalgia. It has been further observed that fibromyalgia affects your overall wellbeing which can be your lifestyle, work abilities, personal relationships or psychological levels and most often affect the young and middle-aged women (14).

How common is Fibromyalgia and how it can be diagnosed?

According to the database including the MEDLINE, PUBMED, and SCOPUS, researchers have reported on the incidence and findings of fibromyalgia in a wider population with depiction of symptoms from no pain, mild pain, localized pain to the generalized pain with other symptoms of anxiety and depression (5) The first experimental study on the indication of fibromyalgia was done which was not associated with other conditions like fibrositis or rheumatoid arthritis (16). Most recently, Fibromyalgia has been classified as a musculoskeletal condition (17). Also, in many studies the physiological response has been related to the concept of centralization generating from central nervous system affecting psychological and social behavior (15). Under Magnetic Resonance Imaging, abnormal signals were observed in the area comprises of amygdala and thalamus in patients reported for fibromyalgia (18). People reported for fibromyalgia are prone to have a comorbid somatic disorder such as irritable colon and early muscle fatigability (19). There is an impact of seasonal variation that exacerbate in the month of November and March (17). Several studies have been done to find out the best diagnostic tool for assessment of individuals with symptoms of fibromyalgia where a Revised Fibromyalgia Impact Questionnaire (FIQR) was introduced, as in Fibromyalgia Impact questionnaire (FIQ) many deficits were evident, also the scoring algorithm was unmanageable and questionnaire does not assess the widespread pain (20). The online study was FIQR was conducted on many patients with different health complaints in a single control group. The findings of this study concluded that there is a significant correlation within the group. An integrative group from 12 countries worked on various papers with a focus on systematic reviews and meta-analysis based on pharmacological and non-pharmacological interventions for fibromyalgia. The primary and secondary outcomes were analysed based on assessment of prevailing symptoms in relation to pain, fatigue, and other activities of daily living (21). Based on the meta-analysis, the exercise therapy was proven to be the better option for management of fibromyalgia in women with dysmenorrhoea over the initial intervention focused on patient counselling and the pharmacological management given to treat sleep disorders. A study based on assessment of efficacy, drug tolerability and safety of SSRI's as a mainstay of the treatment for fibromyalgia was taken as an international review in which a controlled randomized trials of some formulation of SNRIs was done to compare with other drug combination (placebo) such as duloxetine and milnacipran in the treatment of individuals reported for fibromyalgia. This study concludes that there is no significant effect of formulation drug including SSRI's as compare to the placebo to alleviate the symptoms of fibromyalgia (22). Another study with a double-blinded randomized design was conducted to check the efficacy of oral Nonsteroidal anti-inflammatory drugs. This study included 292 participants as per the sampling criteria with a mean age of 39-50 years, among which 89%-100% were women. The pain intensity was assessed with Visual analogue scale on a 0-10 on 11-point scale. It was concluded that the subjects under treatment have relief in pain but there were associated adverse effects (23). Another study entitled the prevalence of fibromyalgia in the worldwide population selected the most appropriate diagnostic tool that can be more reliable and qualitative to monitor the symptoms related to fibromyalgia (4).

Chronic pain being the commonest symptom of FMS, there are various other symptoms that lead to secondary problems like poor quality of life, and social isolation. Reporting these symptoms on time, and creating awareness about FMS can help in providing appropriate care to this somehow deadly condition.

Case Study Description

1.1. Patient Presentation

The patient is a 58-year-old woman, homemaker, non-smoker, Body mass Index of 23.5.

Present medical illness

The patient complains of Chronic pain at different bodily sites from last six months. Sleep disturbances, imbalance, headache, mood swings, negative and suicidal thoughts.

1.2 Past Medical History

Patient has history of upper backache, early fatigability, vision changes, poor fine movements at hands, difficulty in doing kitchen activities, Hypertension, generalized body swelling, depression from last 25 years, for which she is on regular medications twice a day. The pain in the upper back and stiffness in the whole back had confined the patient to home from last three years. She take muscle relaxants (like aceclofenac and tizanidine), antianxiety pills (Petril 0.5mg twice daily) antidepressants (Clonazepam 10 mg once daily). These medicines were prescribed by the family physician and patient has become habitual to these medications to an extent that she sometimes overdose herself whenever she complains of aggravated symptoms and that too without reporting to her physician or family members.

Six months back she also started complaining of pain in bilateral knees to an extent that she was unable to walk within the home and was bounded to bed. She took two months of physical therapy for knee and started with her household activities. The patient also complained of breathing difficulties and severe anxiety that last from few seconds to days without any possible cause. She self-reported that some memories and her family issues recall increases her anxiety issues and she is unable to let go those thoughts from her mind.

1.3 Physical Assessment and Diagnosis

The patient was initially diagnosed with neuropsychiatric problem, for which she was admitted in the rehabilitation centre for one month and was on regular medications twenty-five years back. Then she went to meditation centre for two months but coming after she was back to her symptomatic life. The patient went through all the related blood tests including, Complete blood count (normal range), elevated ESR values, RA test negative, normal kidney profiles, normal serotonin values, moral radiological findings including MRI Scan of brain, low back X-ray studies. Bilateral Knee joint X-ray findings suggestive of early osteoarthritis changes. Based on American College of Rheumatology the Fibromyalgia impact questionnaire suggestive of fibromyalgia like symptoms, with tender point assessment of 13/18 positive tender point sites. Visual analogues scale indicative of severe pain (9/10). Presence of other medical symptoms and history provided the diagnosis of FMS was clearly declared. The tender point assessment is mentioned in Fig.1

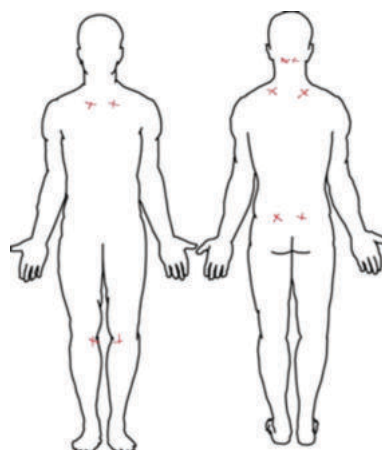


Fig. 1 Tender point Assessment representing site of pain

2. Therapeutic Protocol Designing and Applicability

2.1 Physical Therapy Interventions

The patient was guided through physical therapy interventions and its applicability and usage to treat the FMS related symptoms. Interferential therapy for 15 minutes with manual settings of 4 PV program, at three different bodily sites (Covering 6 points at two same bodily halves) at a time were given. Myofascial Release was given at other sites in the meantime to timely manage the condition. The patient was guided various set of exercises that can be performed at home and can be self-recorded to share at the clinic for tracking proper postural control.

The intervention was planned for one month on regular basis with a guided home care exercise. Further the treatment was reduced to three times a week for another one month. The patient was directed to write a diary about his daily routine, mentioning the low points she observes during her daily life which were dealt by the therapists in appropriate ways using therapies and counselling. The patient was guided to indulge in family activities like gardening, playing indoor games, going for shopping, family outings and social gatherings to avoid isolation.

Table.1 Patient demographic data and pre-post treatment Comparison

Subject Details and Assessment tools	Pre treatment	Post Treatment	6 months follow up
Age	58		
BMI	23.5	21.2	20.69
Occupation	Housewife		
Marital Status			
Married/Unmarried/widow-1/2/3	Married		
Personal Habits	Vegan		
Medical History	Hypertension & Depression ↑↑↑	↑	Normal
FIQR DOMAIN I	25.66	14	11
FIQR DOMAIN II	19	6	4
FIQR DOMAIN III	37	16	13
DEPRESSION DASS 21	17	10	8
Anxiety DASS 21	18	7	5
Stress DASS 21	17	8	5
Pain Pressure Threshold	6.76kPa	16.32kPa	23.45kPa
VAS	9	4	2

2.2 Follow up care

The patient was highly recommended to continue with the follow up advice and visit the centre fortnightly to stay connected and progression of the treatment protocol for another 2-3 months. After two months of regular clinical care the follow up care was given to the patient for a complete six-month duration. There was significant improvement in the primary as well as secondary symptoms of the patient including negative thoughts, quality of life. The patient was more positive, energetic, and optimistic. She reported no feelings of social isolation, reduced stiffness, remarkable decrease in pain, reduced fatigability. There was decreased symptoms of anxiety, depression and negligible suicidal thoughts. The patient was advised to continue with the home care regimen for another six months and visit the center once monthly or bi-monthly for follow up care.

3. DISCUSSION

Fibromyalgia syndrome is a undiagnosed/misdiagnosed disorder that not only affects the person with symptoms but also affect the people attached to the patient including family and friends (24). Fibromyalgia affects the one physically, mentally, psychologically, socially, and intellectually as well.

It is a common condition among people but need proper diagnosis. People are reported under the department of Rheumatology, orthopaedics, neurology, gynaecology, and physicians with their related symptoms but the primary symptoms are reported well by the patients. A complete history taking, and related examination and assessment of presence of symptoms and trigger factors can lead to appropriate diagnosis for this untreated condition. The cure with various pharmacological and non-pharmacological interventions including nanomedicines, Physical therapy, cognitive behavior therapy, dietary modifications, amusement activities, CSR activities can bring down this burden from the society. Though it has been

reported that prevalence of fibromyalgia can be seen in population of any age and gender but the literature review update yet need to set and include some other associated symptoms along with fibromyalgia so that the prevalence of this condition can further be evaluated extensively. In many studies it has been reported that prevalence of fibromyalgia is significantly higher in women population as comparison with the male population. This study concludes that some futuristic studies can be performed with much more defined inclusion and exclusion criteria where gender effect can be nullified and the actual prevalence of fibromyalgia can be identified with the utilization of some more qualitative tools for assessment. The related clinical management can be designed with appropriate care and individual therapy programs can be given to the patients for their early recovery.

4. CONCLUSIONS

This case study has shown an exceptional clinical recovery in Fibromyalgia symptoms with the applicability of Physical therapy measures and patient centric approach. The patient has not only shown recovery in chronic pain, muscle stiffness symptoms but also recovering has been noticed in his other health components including mental, social, and psychological health. The intellectual component including concentration was also become reported better with the interferential therapy, myofascial release and home care regimen. The results depicted here with decreased VAS values, increased pain pressure thresholds, decrease FIQR scoring, decrease tenderness at trigger points opens a new direction in the treatment of this untreated condition but also led to the discovery of an approach that can be cost effective and can easily affordable by the society with no side effects. However, the pharmacological interventions are effective in pain relief and provide other placebo effects, Combination of physical therapy as an alternative and additional therapy can help in early recovery of the prevailing symptoms of FMS.

Ethics Statement

The informed consent was taken from the patient and was informed that the data will be used for the publication.

Authors Contribution

VC designed the case study and take down the final draft. EDS has interacted with the patient and took complete patient history. PS collected the physical examination and assessment of the patient's clinical data and gave the physical interventions. VC and EDS has approved the final draft for publication.

Conflict of Interest Statement

There was no financial support or grant taken from any organization. The author declares no conflict of interest.

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