



## Is biofeedback the last resort for fibromyalgia: A case report and review of Literature

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### Abstract

Fibromyalgia is a common chronic condition characterized by the widespread manifestation of musculoskeletal symptoms. Fibromyalgia usually found in middle-aged married females. Duloxetine, Pregabalin was found to be ineffective in combination with physical exercise. We report a case of a young adolescent girl presented with symptoms of musculoskeletal symptoms for 2 years. She did not show any improvement with Duloxetine and Pregabalin in combination and with medication alone. The patient was treated with Biofeedback, along with medication. She improved within one and a half months. Future studies require demonstrating the role of Biofeedback in Fibromyalgia.

**Keywords:** fibromyalgia; musculoskeletal symptoms; biofeedback

### 1. Introduction

Fibromyalgia (FM) is a chronic idiopathic pain syndrome characterized by widespread symptoms including musculoskeletal pain, hyperalgesia, allodynia, low mood, easy fatigability with disturbed sleep<sup>[1, 2]</sup>. FM affects 2%-10% of the world's population. Predominantly, FM affects the female as compared to the male, with a ratio of 2:7<sup>[3, 4]</sup>. Studies across the world reported the 85%-90% of females are married, middle-aged women. Half of the women have a primary psychiatric illness at the time of diagnosis. Approximately 75% of women have a lifetime history of depression or anxiety disorder<sup>[5, 7]</sup>. Among the etiological factors, psychosocial factors like emotional distress or stress are considered as the most relevant factors. Hence, it is imperative to understand the efficacy of non-pharmacological treatment. The patients with FM incur the same cost of treatment as Rheumatoid arthritis or any other chronic illness<sup>[8]</sup>. This is because of the non-availability of effective treatment for FM. Though there are medicines like Duloxetine, amitriptyline, and pregabalin among the most widely used medications with higher efficacy reported with duloxetine<sup>[9, 11]</sup>. However, metanalysis suggests that these medications are not much effective and provide only partial relief. Hence there is a need for treatment that can provide complete relief and should be cost-effective.

Though there are various strategies such as psycho-education, cognitive behavior therapy, pharmacological agents like muscle relaxants, antidepressants, NSAIDs, and Biofeedback (BF). BF is a very popular intervention either alone or with some other modalities, as mentioned above<sup>[12]</sup>. BF has been found to be very beneficial in the management of chronic pain, headache or other pain disorders. BF has also shown a promising role in the management of FM. The evidence is still inconclusive<sup>[13, 14]</sup>. There could be various reasons like little are known about the BF and it is not yet part of regular treatment of FM.

Biofeedback is a procedure in which patients' bodily responses such as muscle tension, heart rate or skin temperature are monitored and reported to the patient through as auditory or visual modality. BF is also known as "psycho-physiological intervention." It has been shown that the effectiveness of EMG BF is mediated by the cognitive changes rather than by learned physiological control<sup>[15]</sup>. In developing countries like India, a little is known about the usefulness of BF. The use is very minimal, and to date, there is no data about the usefulness of BF.

As per our knowledge, this is the first case from the developing countries like India reports the management of the FM with BF. The index case is a young adolescent girl free from any psychiatric symptoms and difficult to treat with various medications. As per our knowledge, before this, FM never reported in a young adolescent girl without the association of psychiatric symptoms.

### Case Report

The patient was a 21-year-old unmarried female from an urban background, Hindu nuclear family working in a private company. She presented with the symptoms of back pain, diffuse pain over the shoulder and neck region for the past 2 years. She was not able to perform her daily activities adequately and had to take leave frequently from work. Her sleep also got disturbed and would be able to sleep with sleeping pills only. After the physical exercise, the severity of pain would increase. At the time, the pain would be so severe that she had to visit the emergency department and had to get injectable. She was treated with NSAIDs (like diclofenac, paracetamol), muscle relaxants but had no relief. She also received Pregabalin 150 mg/day (6 months), Duloxetine (120 mg/day). Apart from these medications also received injectable, steroids, calcium, vitamin D, and multivitamins but the pain persisted as such. She was referred to a psychiatrist by a physician. On mental state

examination, the patient was preoccupied with pain. No stressor was found. Laboratory tests including vitamin D, Vitamin B12, Calcium, Rheumatoid factor, complete blood count, Liver function test, thyroid function test and renal function test, were within normal limits. On local examination, no abnormality was detected. She was diagnosed with Fibromyalgia and was on cap venlafaxine 150 mg/day. Jacob Progressive Muscular Relaxation exercise (JPMR) taught and advised her to do it regularly at least once in a day. Biofeedback started with one session per day. The session would be for 45 minutes. After the 10<sup>th</sup> session, she perceived improvement of 50%-60%. Following which the frequency of session reduced once/week because the patient was not able to come daily. After 1 month, she reported complete improvement. She received a total of 15 sessions of BF along with the regular JPMR. There was no current or past history of substance use/abuse or any primary psychiatric illness.

### Discussion

FM is a chronic disorder of musculoskeletal disorder of unknown cause. The diagnosis of FM is made whenever any patient fulfills the criteria of the American College of Rheumatology, 1990 [16]. The first criteria of pain for at least 3 months and second criteria require the presence of at least 11 sites of tender points. Our patients fulfill the criteria. FM is usually accompanied by various psychiatric symptoms like sleep disturbance, mood symptoms, and family history of mood disorder. However, our patient had sleeplessness, but neither had mood symptoms nor a family history of mood disorder.

The US FDA approved the drugs, i.e., Pregabalin, Duloxetine, and Milnacipran for the FM. The combination of Pregabalin and Duloxetine also has been found effective in the treatment of FM than either medication alone (17). Our patient received Duloxetine as well as Pregabalin as monotherapy and in combination too but the patient did not respond. Non-pharmacological therapy like physical exercise, aerobic exercise, massage, yoga and cognitive behavior therapy also found to be effective in the management of FM — non-pharmacological treatment in combination with pharmacological treatment, proven to be more effective. In the index case we described, the patient practiced physical exercise in combination with the medication, as mentioned. But this was found to be ineffective in the present case.

Based on the improvement of FM, we recommend incorporating the BF into the psychological or multidisciplinary FM treatment programs. BF is a cost-effective treatment and also free from any side effects. There is a need for future study should focus on the short term as well as long term efficacy of the BF in FM. Future studies should be focus on investigating the mechanism of improvement in the BF groups as well as in the control group.

### Conclusion

There is a need for a holistic approach in the treatment of FM. The patient usually contacts either the physician or orthopaedician, and they should be aware of the importance of non-pharmacological treatment. They should refer the patient as soon as possible, so a psychiatrist. The

psychiatrist should consider the BF as the primary modality of the treatment for the patients with FM. BF not only helps in the improvement of the symptoms but also improves the quality of life. BF should be considered as a first-line treatment for the patient with FM. However, there is a need for future studies to make the evidence persuasive. It can be concluded that Non-pharmacological therapies are also effective in symptom relief. A multidisciplinary approach is required to treat FM effectively. FM can be found in young adolescent females.

### References

1. Goldenberg DL. Fibromyalgia syndrome: an emerging but controversial condition. *JAMA*. 1987; 257.
2. Yunus MB, Masi AT, Calabro JJ, Miller KA, Feigenbaum SL. Primary fibromyalgia (fibrositis): clinical study of 50 patients with matched normal controls. *Semin Arthritis Rheum*. 1981; 11:151-71.
3. D'Agnelli S, Arendt-Nielsen L, Gerra MC, Zatorri K, Boggiani L, Baciarello M, *et al*. Fibromyalgia: Genetics and epigenetics insights may provide the basis for the development of diagnostic biomarkers. *Mol Pain*. 2019; 15:1-7.
4. Sosa-Reina MD, Nunez-Nagy S, Gallego-Izquierdo T, Pecos-Martín D, Monserrat J, Alvarez-mon. Effectiveness of Therapeutic Exercise in Fibromyalgia Syndrome: A Systematic Review and Meta-Analysis of Randomized Clinical Trials. *Biomed Res Int*. 2017; 3:1-14.
5. Ghavidel-Parsa B, Bidari A, Amir Maafi A, Ghalebzagh B. The Iceberg Nature of Fibromyalgia Burden: The Clinical and Economic Aspects. *Korean J Pain*. 2015; 28(3):169-76.
6. Arout CA, Sofuoglu M, Bastian LA, Rosenheck RA. Gender Differences in the Prevalence of Fibromyalgia and in Concomitant Medical and Psychiatric Disorders: A National Veterans Health Administration Study. *J Womens Health (Larchmt)*. 2018; 27(8):1035-44.
7. Bhargava J, Hurley JA. Fibromyalgia. *StatPearls [Internet] Treasure Island (FL)*, 2019.
8. Zamunér AR, Andrade CP, Arca EA, Avila MA. Impact of water therapy on pain management in patients with fibromyalgia: current perspectives. *J Pain Res*. 2019; 12:1971-2007.
9. Bidari A, Moazen-Zadeh E, Ghavidel-Parsa B, Rahmani S, Hosseini S, Hassankhannni A. Comparing duloxetine and pregabalin for treatment of pain and depression in women with fibromyalgia: an open-label randomized clinical trial. *Daru*. 2019; 27(1):149-58.
10. Acet G, Kaya A, Akturk S, Akgol G. A comparison of the effectiveness of amitriptilin and pregabalin treatment in fibromyalgia patients. *North Clin Istanbul*. 2017; 4(2):151-9.
11. Saeed SA, Cunningham K, Bloch RM. Depression and Anxiety Disorders: Benefits of Exercise, Yoga, and Meditation. *Am Fam Physician*. 2019; 99(10):620-7.
12. Nestoriuc Y, Martin A, Rief W, Andrasik F. Biofeedback treatment for headache disorders: a comprehensive efficacy review. *Appl Psychophysiol Biofeedback*. 2008; 33(3):125-40.
13. Orlando B, Manfredini D, Salvetti G, Bosco M. Evaluation of the effectiveness of biobehavioral therapy

- In the treatment of temporomandibular disorders: a literature review. *Behav Med.* 2007; 33(3):101–18.
14. Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gotzsche P, Ioannidis JP, *et al.*, “The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration,” *BMJ.* 2009; 339:b2700.
  15. Rains JC. Change mechanisms in EMG biofeedback training: Cognitive changes underlying improvements in tension headache. *Headache.* 2008; 48(5):735–6.
  16. Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL, *et al.* The American College of Rheumatology 1990 Criteria for the Classification of Fibromyalgia. Report of the Multicenter Criteria Committee. *Arthritis Rheum.* 1990; 33:160-72.
  17. Goldenberg D, Mayskiy M, Mossey C, Ruthazer R, Schmid C. A randomized, double-blind crossover trial of fluoxetine and amitriptyline in the treatment of fibromyalgia. *Arthritis Rheum.* 1996; 39:1852-9.