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The Impact of Intramuscular Depot Betamethasone Injection (Diprospan) on Patients with Fibromyalgia and Normal C-Reactive Protein Levels

George Habib[1,2], Hani Nijm[3], Uriel Levinger[3], Mohammad Hyder[3]

[1]Rheumatology Unit, Laniado Hospital, Netanya, Israel
[2]Rheumatology Clinic, Nazareth Hospital, Nazareth, Israel
[3]Department of Medicine C, Laniado Hospital, Netanya, Israel
Email: gshabib@gmail.com

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Abstract

Introduction: Intramuscular depot betamethasone treatment had resulted in a significant improvement among fibromyalgia patients with elevated C-reactive protein (C-RP) levels. Here, we wanted to evaluate the same regimen of treatment among fibromyalgia patients with normal C-RP levels. These patients represent the overwhelming majority of fibromyalgia patients. **Patients and Methods:** Consecutive patients with fibromyalgia attending the outpatient rheumatology clinic, with normal C-RP level and negative serology, who had failed different medical treatment, were asked to participate in our study. All patients have qualified the American College of Rheumatology (ACR) criteria from 2010. After consent, patients had an intra-muscular injection of 14 mg depot betamethasone at the gluteal area. Just prior to the injection, 1 week and 1 month later, patients were interviewed by phone and asked to answer the Fibromyalgia Revised Questionnaire (FIQR). Wilcoxon's signed ranked test was used to compare the results 1 week and 1 month following the injection, compared to the base line scores. **Results**: Seventeen (17) patients completed the study. Favorable effects were seen regarding 13 out of 19 parameters one week following the injection, including functional parameters, mood and anxiety, tenderness to touch and intolerance to noise and light. No significant favorable effect was seen 1 month following the injection except for one parameter: ability of walking for twenty minutes. **Conclusions:** IM depot betamethasone injection had very limited and transient favorable effects on fibromyalgia patients with normal C-RP levels. Such a treatment is not a

recommended modality of routine treatment, among fibromyalgia patients with normal C-RP levels.

Keywords

Fibromyalgia, Corticosteroids, Intramuscular Injection, Diprospan, C-Reactive Protein

1. Introduction

Fibromyalgia is a common chronic pain syndrome, affecting women more than men by a ratio of ~4:1 [1]. It is characterized by diffuse musculoskeletal pain and extreme fatigue [2]. Other complaints include morning stiffness, headache, numbness, muscle spasm, tremor, abdominal pain (irritable bowel syndrome) exaggerated sensitivity to touch, light and coldness [3]. It is usually associated also with sleep and mood problems [4]. Treatment usually is through different types of medications including non-steroidal anti-inflammatory drugs (NSAIDS) simple analgesics, antidepressants, muscle relaxants, pregabalin like medications, simple and strong narcotics and or medical cannabis [5]-[9]. Hydrotherapy could also be of help.

Many patients are also subjected to local corticosteroid injection mainly due to enthesopathy [10]. Some patients also with fibromyalgia report positive effects to systemic steroids. Usually, these patients are subjected to systemic steroids after being suspected initially of inflammatory rheumatic diseases, such as rheumatoid arthritis, ankylosing spondylitis or polymyalgia rheumatica.

In a previous study, we had shown that depot betamethasone intra-muscular injection of 14 mg had resulted in a favorable systemic effect of different parameters of the Fibromyalgia impact questionnaire revised (FIQR), lasting for at least 1 month following the injection [11]. In this study, we wanted to evaluate such a treatment among fibromyalgia patients but with normal C-RP level.

2. Patients and Methods

Consecutive patients with fibromyalgia and normal C-RP level, attending the outpatient rheumatology clinics at Laniado Hospital in Netanya or the Nazareth Hospital in Nazareth, were prospectively asked to participate in our study. After consent, patients were interviewed by phone and asked to answer the fibromyalgia impact questionnaire revised (FIQR), just prior to the depot betamethasone injection (betamethasone dirpopionate and betamethasone sodium phosphate), and 1week and 1 month later. The interviews of all the patients were done by the same investigator (HN) and all the injections were performed by the same investigator (GH). This study was approved by the local ethics committee of Laniado Hospital, and all the patients signed a consent form.

Inclusion criteria: Patients who qualified the 2010 ACR criteria for the diagnosis

of fibromyalgia, and patients who failed medical treatment of simple analgesic and opiates, pregabalin and duloxetine.

Exclusion criteria included patients who had any systemic or local steroid treatment during the previous 6 months, patients with allergy to steroids patients with uncontrolled hypertension or diabetes, patients with positive serology of antinuclear antibodies (ANA), anti-neutrophil cytoplasmic antibodies (ANCA) and rheumatoid factor (RF), patients on systemic anticoagulants, patients with post stress trauma disorder (PTSD) patients who developed fibromyalgia following Corona virus infection and patients on anticoagulants.

Simple measures of statistics were used, and Wilcoxon signed rank test using SPSS 2021 software, to compare the scores of each item of the questionnaire at different time points. This test is usually used for continuous measures with sample size of less than 30.

3. Results

Seventeen patients completed the study, and all were female.

Table 1 summarizes the demographic clinical and laboratory parameters of all the patients. All participants were women, mostly young and nearly 90% were married. All of them had tried different types of meds, mostly NSAIDS, simple opiates and preagabalin. Mean CRP levels were 3.2 mg% (normal 0 - 5).

Table 2 summarizes the results of the FIQR at different time pint.

Table 1. Demographic, clinical and laboratory parameters of the patients.

Result (%)	Parameter
Women:men	17:0
Age (year)	41 ± 12.5, 21 - 59
Married	16 (93)
Fibromyalgia duration (years)	8 ± 5, 1 - 15
C-RP level (mg%)	2.3 ± 2.4, 0.5 - 5
Previous NSAID treatment	17 (100)
Rokacet* treatment	16 (94)
Pregabalin treatment	11 (65)
Zaldiar° treatment	15 (88)
Pain clinic visit/s	5 (29)

*Codeine/Paracetamol/caffeine, °Tramadol/paracetamol.

Table 2. FIQR results of pre-, 1 week and 1 month, following the IM betamethasone injection.

Time / Parameter	Baseline	After 1 week	P value	After 1 month	P value
- Pain	9.17 ± 1.18, 7 - 10	7.82 ± 2.88, 0 - 10	0.257	9.12 ± 0.99, 7 - 10	0.655
- Energy	8.47 ± 1.59, 5 - 10	7.06 ± 2.95, 3 - 10	0.028	8.65 ± 1.54	0.317
- Stiffness	7.82 ± 2.77, 3 - 10	6.70 ± 3.53	0.102	7.76 ± 2.77, 0 - 10	0.317
- Sleep Quality	8.65 ± 0.862, 7 - 10	7.29 ± 1.52, 1 - 10	0.102	8.53 ± 0.87, 7 - 10	0.564
- Depression	8.82 ± 0.99, 7 - 10	7.71 ± 2.37, 3 - 10	0.014	9 ± 0.94, 7 - 10	0.157

Continued

- Memory problems	7.12 ± 1.45, 5 - 10	6.71 ± 2.17, 3 - 10	0.414	7.29 ± 1.57, 5 - 10	0.655
- Anxiety	8.59 ± 1.22, 6 - 10	7.47 ± 1.42, 1 - 10	0.041	8.41 ± 1.76, 6 - 10	0.564
- Tenderness to touch	8.18 ± 1.67, 7 - 10	6.82 ± 2.67, 0 - 10	0.041	8.12 ± 1.76, 3 - 10	1.0
- Intolerance to noise	8.18 ± 1.63, 3 - 10	7.01 ± 2.61, 2 - 10	0.046	7.10 ± 1.63	0.180
- Balance	6.10 ± 2.77, 0 - 10	5.41 ± 1.32, 0 - 10	0.147	6.10 ± 2.66, 0 - 9	0.677
- Comb hair	7.01 ± 1.56, 5 - 10	5.82 ± 2.53, 1 - 10	0.020	6.53 ± 1.59, 5 - 9	0.180
- 20Minutes walking	8.47 ± 1.01, 7 - 10	6.88 ± 2.18, 1 - 10	0.005	8.10 ± 1.34, 5 - 10	0.046
- Prepare a meal	7.41 ± 1.23, 4 - 8	6.29 ± 2.20, 1 - 9	0.016	7.0 ± 1.7, 4 - 9	0.131
- Wash Floor	8.65 ± 1.22, 6 - 10	7.71 ± 2.23, 3 - 10	0.057	8.71 ± 1.26, 6 - 10	0.785
- Stairs one floor	8.71 ± 1.26, 5 - 10	6.47 ± 2.07, 2 - 10	0.034	7.65 ± 1.50, 5 - 10	0.655
- Change bed sheets	7.77 ± 1.75, 3 - 10	6.88 ± 2.39, 2 - 10	0.902	7.35 ± 2.34, 3 - 10	0.197
- Sit 45 minutes	8.94 ± 1.03, 7 - 10	7.71 ± 2.71, 1 - 10	0.041	8.88 ± 1.11, 7 - 10	0.438
- Buy from grocery	8 ± 1.97, 4 - 10	7.1 ± 2.5, 1 - 10	0.045	7.941.78, 4 - 10	0.705
- Carry a bag	8.94 ± 1.43, 5 - 10	7.76 ± 2.51, 4 - 10	0.041	8.53 ± 1.77, 5 - 10	0.102

4. Discussion

Intra-muscular depot betamethasone injection had a short transient significant favorable effect for at least one week. However nearly all patients had no significant effect after 4 weeks except in the parameter of ability of walking for twenty minutes. These results are in contrast to the previous study where IM depot betamethasone injection had favorable effect for at least 1 month, among patients with fibromyalgia and elevated C-RP levels. The parameters that showed favorable effect in this current study, 1 week following the IM depot betamethasone injection, were 13 (out of 19 parameters of the questionnaire), and included functional parameters and also parameters of mood and anxiety. Other parameters that also showed significant improvement were tenderness to touch and intolerance to noise and light. It is interesting to note the lack of a significant effect on pain and stiffness, two of the most important features of fibromyalgia. It could be that the favorable effect on energy had lead eventually to an improvement of function. The improvement in parameters like tenderness to touch and intolerance to noise and light following IM depot betamethasone injection, is not fully understood. These parameters could have a common pathogenesis, and they are also observed in other entities such as post trauma and post Corona infection syndromes.

Other parameters that showed no significant improvement after one week, included quality of sleep, stability in walking and memory/concentration. This fact is not surprising since it is quite known that corticsteroids could induce lack of sleep and confusion affecting concentration and memory.

Overall, there were few adverse effects from the IM depot betamethasone injection, including one participant who reported weight gain of 12 kg during 2-month

period, 2 patients who reported increased headache and other 3 patients who reported worsening of sleep.

The differences in duration and range of favorable effects of IM depot betamethasone injection, between fibromyalgia patients with elevated CRP levels against those with normal CRP levels, could be related to unapparent inflammatory process among fibromyalgia patients with elevated C-RP levels, although such patients had no clinical evidence of synovitis or positive serology.

Therefore, it seems that depot betamethasone intramuscular injections have a limited role in the treatment of fibromyalgia patients with normal levels of CRP, and different types of treatment should be tried.

On the other hand, local corticosteroid injection at places like epicondyles or great trochanter/s is a different story, and here local steroid injection could have a significant favorable effect on the local pain, regardless of CRP level.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Ablin, J.N., Oren, A., Cohen, S., *et al.* (2012) Prevalence of Fibromyalgia in the Israeli Population: A Population-Based Study to Estimate the Prevalence of Fibromyalgia in the Israeli Population Using the London Fibromyalgia Epidemiology Study Screening Questionnaire (LFESSQ). *Clinical and Experimental Rheumatology*, **30**, 39-43.

[2] Walker, J. (2016) Fibromyalgia: Clinical Features, Diagnosis and Management. *Nursing Standard*, **31**, 51-63. https://doi.org/10.7748/ns.2016.e10550

[3] Bair, M.J. and Krebs, E.E. (2020) Fibromyalgia (Japanese Version). *Annals of Internal Medicine*, **172**, JITC33-JITC48. https://doi.org/10.7326/istranslatedfrom_aitc202003030_japanese

[4] Singh, R., Rai, N.K., Pathak, A., Rai, J., Pakhare, A., Kashyap, P.V., *et al.* (2024) Impact of Fibromyalgia Severity on Patients Mood, Sleep Quality, and Quality of Life. *Journal of Neurosciences in Rural Practice*, **15**, 320-326. https://doi.org/10.25259/jnrp_14_2024

[5] Derry, S., Wiffen, P.J. and Häuser, W. (2017) Oral Nonsteroidal Anti-Inflammatory Drugs for Fibromyalgia in Adults. *Cochrane Database of Systematic Reviews*, No. 3, CD012332. https://doi.org/10.1002/14651858.CD012638

[6] Walitt, B., Urrútia, G., Nishishinya, M.B., Cantrell, S.E. and Häuser, W. (2015) Selective Serotonin Reuptake Inhibitors for Fibromyalgia Syndrome. *Cochrane Database of Systematic Reviews*, No. 6, CD011735. https://doi.org/10.1002/14651858.cd011735

[7] Derry, S., Cording, M., Wiffen, P.J., Law, S., Phillips, T. and Moore, R. (2016) Pregabalin for Treating Fibromyalgia Pain in Adults. *Cochrane Database of Systematic Reviews*, **9**, CD011790. https://doi.org/10.1002/14651858.CD011790

[8] Cameron, E.C. and Hemingway, S.L. (2020) Cannabinoids for Fibromyalgia Pain: A Critical Review of Recent Studies (2015-2019). *Journal of Cannabis Research*, **2**, Article No. 19. https://doi.org/10.1186/s42238-020-00024-2

[9] Zamunér, A.R., Andrade, C.P., Arca, E.A. and Avila, M.A. (2019) Impact of Water Therapy on Pain Management in Patients with Fibromyalgia: Current Perspectives. *Journal of Pain Research*, **12**, 1971-2007. https://doi.org/10.2147/jpr.s161494

[10] Ernberg, M., Hedenberg-Magnusson, B., Alstergren, P. and Kopp, S. (1998) Effect of Local Glucocorticoid Injection on Masseter Muscle Level of Serotonin in Patients with Chronic Myalgia. *Acta Odontologica Scandinavica*, **56**, 129-134. https://doi.org/10.1080/000163598422857

[11] Dirawi, N. and Habib, G. (2022) Effect of Intramuscular Depot Betamethasone Injection in Patients with Fibromyalgia and Elevated C-Reactive Protein Levels. *Journal of Investigative Medicine*, **70**, 1553-1556. https://doi.org/10.1136/jim-2021-002293