Case Report

Fibromyalgia and Dysfunction of Autonomic Nervous System - ☄️

F.A. Benaich¹*, M. El Bakkali², H. Benjellun¹

¹Unit of Cardiology A, Ibn Sina University Hospital, Rabat- Morocco
²Physiology of Exercise Team (EPE), Faculty of Medicine and Pharmacy, University Mohammed V, Rabat- Morocco

*Address for Correspondence: Fatima Azzahrae BENAICH, Ibn Sina University Hospital, Unit of Cardiology A, Av Lamfadel Cherkaoui, BP 6203, Rabat-Institutes, Email: ben.fatimaazzhoua@gmail.com

Submitted: 01 October, 2016; Approved: 31 October, 2016; Published: 02 November, 2016

Citation this article: Benaich FA, El Bakkali M, Benjellun H. Fibromyalgia and Dysfunction of Autonomic Nervous System. Int J Case Rep Short Rev. 2016;2(1): 004-010.

Copyright: © 2016 Benaich FA, et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
ABSTRACT

Fibromyalgia syndrome (FMS) has a strong clinical and social impact affecting the personal, family and working life of the sufferer. The first controlled study of FMS was published by Yunus et al. In Europe, FMS has been estimated to affect approximately 4.7% of the general population. We report a case of 52 year old woman suffered from chronic fatigue for 2 years with widespread pain. Physical examination reveals fibromyalgia syndrome. Complementary tests rule out other etiology. She was treated for her physical abnormality with a significant improvement in her quality of life and had a relief from pain. This study may bring the FMS to clinical consciousness.

Keywords: Autonomic nervous system; Fibromyalgia; Parasympathetic nervous system; Sympathetic nervous system; Treatment

INTRODUCTION

Fibromyalgia syndrome (FMS) as a disorder has more than one sign or symptom, and has the unfortunate misconception among physicians who either believe in the reality of this disorder or not. FMS is characterized by chronic widespread musculoskeletal pain, stiffness and tenderness to palpation at specific tender points [1]. There is no universal known cause, although numerous overlapping risk factors have been identified. Disorder of the autonomic nervous system (ANS) represents one such overlapping risk factor. The first controlled study of FMS was published by Yunus et al. [2]. In Europe, FMS has been estimated to affect approximately 4.7% of the general population [3].

CASE REPORTS

Patient

A 52 year old woman had a history of rheumatoid arthritis treated by Salazopirine, and hypothyroidism treated with the substitutive hormone. She was referred to our unit of ANS by rheumatologist. The patient suffers from chronic fatigue with a widespread pain, stiffness and non-refreshing sleep for at least 2 years. Physical examination revealed the following results: blood pressure while sitting was 127/68 mmHg, decreasing to 94/52 mmHg in standing position; heart rate: 66 beats/min; tenderness in palpation revealed pain on both sides of the body, below and above joint articulation, and along the axial skeleton.

METHODS

The Autonomic Nervous System ANS was performed, In front of the evocative clinical symptoms of fibromyalgia, showing a dysautonomia nervous system.

Cardiovascular autonomic testing

Patients were initially lied in bed in a quiet room for at least 30 min. Then monitoring of the BP, using a Dynamap (Critikon, 1846 SXP) and the Heart Rate (HR) (screen of posting LCD CS 503 E, HELLIGE, EK 512 E) was done. All the tests were carried out in the morning, at fasting and under no treatment during at least 48 hours. The basal systolic BP (SBP) and HR were measured in both arms at rest of at least 10 min, and then Ewing cardiovascular autonomic tests were performed.

Tests Description:

- The Deep Breathing Test (DB)

This test analyzes the vagal response [4, 5]. The respiratory frequency has an influence on the variation of RR interval on the
electrocardiogram (EKG). The procedure was as the following: the patient breathes deeply at a frequency of six breaths/minute [6]. It makes it possible to evaluate the vagal activity which is expressed as a percentage:

$$\frac{(RR_{\text{maximal}} - RR_{\text{minimal}})}{RR_{\text{minimal}}} \times 100.$$ 

- **The Isometric Contraction or Hand Grip Test (HG)**

During three minutes the patient performs a manual pressure of 50% of the maximum with assistance of a dynamometer. The muscular contraction involves a rise in BP related to an increase of sympathetic nerve activity at the muscular level that is effort-dependent and time-dependent [7, 8]. The peripheral alpha sympathetic nerve response is given by the increase degree of the BP.

**Alpha peripheral sympathetic response (alpha PS):**

$$\text{Alpha peripheral sympathetic response (alpha PS)} = \frac{(BP_{\text{after}} - BP_{\text{before}})}{BP_{\text{before}}} \times 100.$$ 

- **The Mental Stress Test (SM)**

The patient performs mental arithmetic calculations by removing the number 7 successively from 200. The result is an increase in BP and in HR by activation of the central sympathetic nerve [6]. In mental stress, the central sympathetic nerves activities “α” was evaluated by measuring the variations of BP as showing in the following formula [7, 8]:

**Alpha central sympathetic response (alpha SC):**

$$\text{Alpha central sympathetic response (alpha SC)} = \frac{(BP_{\text{after stimulation}} - BP_{\text{before stimulation}})}{BP_{\text{before stimulation}}} \times 100.$$ 

The “β” central sympathetic nerves activities was evaluated by measuring the variations of HR as showing in the following formula [7, 8]:
Figure 4: Heart rate during the postural orthostatic test done after 7 months of treatment with fludro-cortisone, reflecting an improvement in beta peripheral adrenergic response.

Figure 5: Evolution of blood pressure during the postural orthostatic test done after 7 months of treatment with fludro-cortisone, reflecting an improvement in the sympathetic alpha adrenergic response (late onset of orthostatic hypotension).

**Beta central sympathetic response (beta SC):**

\[ \frac{(HR_{after\ stimulation} - HR_{before\ stimulation})}{HR_{before\ stimulation}} \times 100 \]

**Alpha peripheral adrenergic sympathetic response (alpha PS):**

\[ \left( \frac{BP\ orthostatic - BP\ supine\ position}{BP\ supine\ position} \right) \times 100 \]

**RESULTS**

The patient was put under vienotonic with low peripheral venous contention, fludrocorisone and Maprotiline an inhibitor of serotonin and dopamine.

Verification carried 04 months and 07 months after treatment showed a significant improvement on the quality of life with correction of postural hypotension.

**DISCUSSION**

FMS is a chronic disease that is relatively new on the medical
Figure 6: New clinical fibromyalgia diagnostic criteria [25].
Young women. A variety of treatment strategies are available for FMS. The goal of pharmacological treatment is symptom amelioration, and medications should be started "low and slow", and it is considered long-term management. In general, non-medication treatment may be helpful, but many patients may not stick to them. Currently, three drugs pregabalin, duloxetine and milnacipran have been approved by the FDA for the treatment of FMS. The goal of pharmacological treatment is symptom amelioration, and medications should be started "low and slow", with small doses increased gradually. Tramadol appears to inhibit reuptake of norepinephrine and serotonin, and it is also a receptor agonist. Tramadol has been shown to provide pain relief that is superior to placebo [19]. Beneficial effects for multidisciplinary treatment are found for those patients compared to monodisciplinary treatment programs [20]. Multimodal treatment based on light physical exercise, cognitive behavioral therapy, patient education, biofeedback relaxation and medication, are recommended [21, 22]. However, there is a clear need for continued research into both the diagnostic and therapeutic approach in FMS.

CONCLUSION

Still, FMS may be a diagnosis of exclusion, and other etiology must be ruled out. However, it is a frequent disorder that affects typically young women. A variety of treatment strategies are available for patients with FMS, ranging from monotherapy to multidisciplinary treatment. The multidisciplinary approach remains recommended.

REFERENCES

22. Parra-Delgado M and Miguel Latorre-Postigo J, Effectiveness of Mindfulness-Based Cognitive Therapy in the Treatment of Fibromyalgia: A Randomised
