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PUBTEXTO

Effective Autonomic Nerve Treatmentsin Female Patient with Migraine and Tension-Type Headache (TTH)

Moriyasu A[a], Bando H[bc*], Takasugi M[a], Hanabusa H[a] and Murakami M[d]

[a]Akiboshi Bright Star training rehabilitation center, Kagawa, Japan
[b]Life Universe Co., Ltd, Kagawa, Japan
[c]Tokushima University / Medical Research, Tokushima, Japan
[d]Japan Masters Athletics, Kagawa division, vice-president, Kagawa, Japan

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Corresponding author: Bando H, Tokushima University / Medical Research, Tokushima, Japan; E-mail: pianomed@bronze.ocn.ne.jp; DOI: https://doi.org/10.36266/RJSHP/129

Abstract

Authors have been involved in rehabilitation, sports medicine, and psychosomatic problems. **Case presentation:** The patient is 40-year-old female, who suffers from migraine and tension-type headache (TTH) for 10 years.Autonomic nerve exam showed decreased function of sympathetic and parasympathetic nerves with tachycardia as 103/min. We continued a series of autonomic nerve treatments, and then pulse was decreased to 90's, 80's, 70's in 1,3,6 months. After treatments, she showed improved autonomic function and stress resilience.

Discussion and Conclusion: The treatments suggest efficacy for recovery of autonomic nerve function. They may become useful reference for novel methods for future development

Keywords: Autonomic Nerve Exam; Stress Resilience; Tension-Type Headache (TTH); Migraine; Autonomic Nerve Treatments

Introduction

For decades, social circumstance has been changed to much extent, then quite a few people are suffered from and various stressors and psychosomatic problems such as headache [1]. Headache has been classified into lots of types, in which common types are migraine and tension-type headache (TTH) [2]. In recent years, new type of headache associated with migraine and TTH has been observed [3]. Authors and collaborators have continued clinical practice, research and treatments for various diseased states, including psychosomatic problems, headache, shoulder pain, arthralgia, sports injuries, rehabilitation, non-communicable diseases (NCDs) and so on [4,5]. Among our experience, we had an impressive female patient with migraine and TTH who showed remarkable effect for continuous autonomic nerve treatment. General clinical progress and some perspectives are described in this article.

Case Presentation

History and Physicals

The case is a 40-year-old female. As her previous history, she had practiced dancing from 3 to 16 years old (yo), and did not have sports history after that. She has unremarkable health problems until 30yo. and then suffered from mixed migraine/tension headaches for 10 years. She visited some clinics and received the treatment, but the symptom did not relieve. She visited our health and sports facility, and started to receive adequate treatments. Concerning physical examination, consciousness, vitals, head, neck, lung, heart and abdomen were almost negative. Only remarkable finding was tachycardia, in which her pulse rate was 103 per minute in usual situation. This degree was similar to the condition in running condition. Her stature was 147 cm and weight 49.5kg with BMI 22.9 kg/m^2.

Several Examinations

General blood chemistry examination was conducted, which revealed to be unremarkable (Table 1). Due to her physical and psychological condition, autonomic nerve exam was performed. The result was shown in Figure 1a. Concerning autonomic nerve, tachycardia was found, in which resting pulse rate was more than 100 /min. As fluctuation of pulse, the value of R-R interval was decreased. Autonomic nerve balance showed decreased activity of sympathetic nerve and parasympathetic nerve. Then, the Stress Resilience (SR) was decreased. From all of these results, general status of the health before the treatment was poor, and the degree of decreased health was not calculated by usual evaluation method.

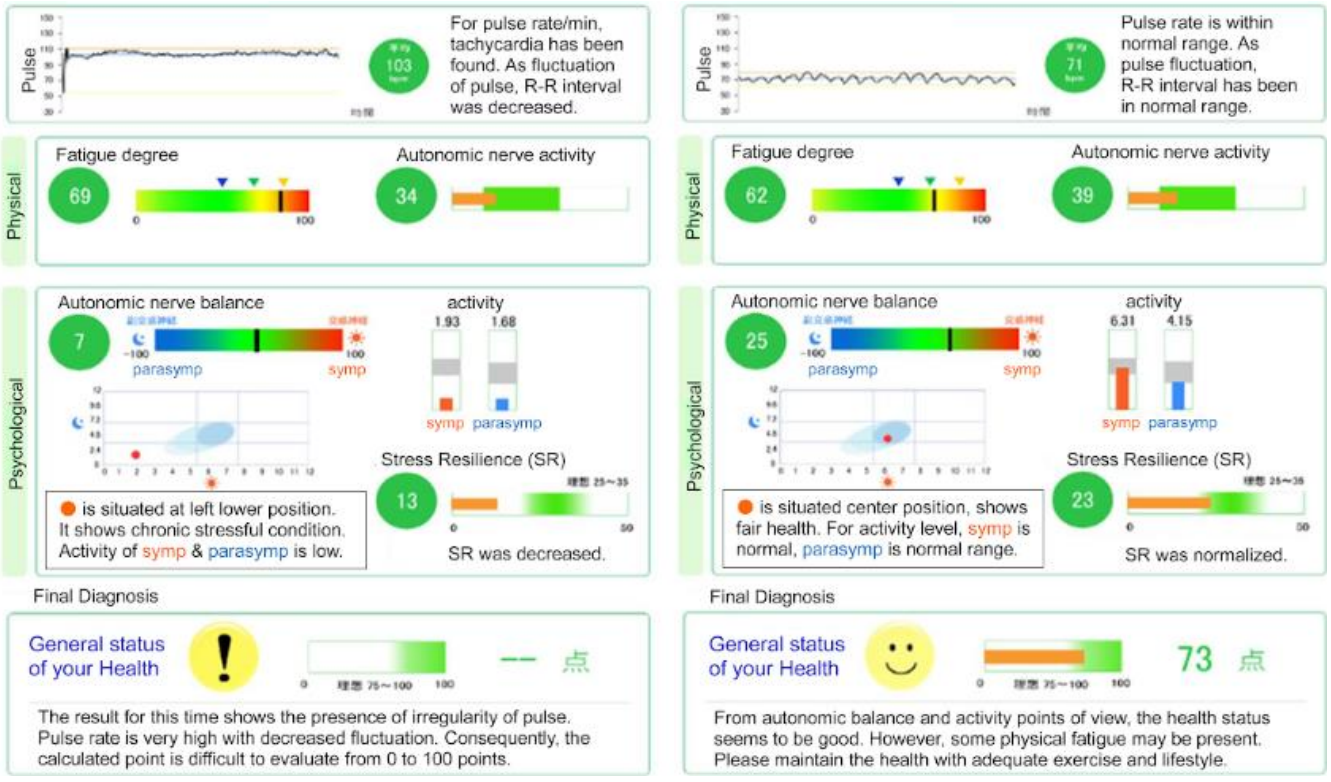

***Figure 1**: The results of autonomic nerve exam*
1a: before treatment in June 2021
1b: after treatment in May 2022.

***Table 1**: Laboratory Data of the Case.*

		Jun 2021	May 2022	unit
Liver	AST	28	25	U/L
	ALT	25	24	U/L
	r-GT	17	18	U/L
	LDH	177	145	U/L
	ALP	-	97	U/L
	CPK	73	-	U/L
Renal	BUN	9	23	mg/dL
	Cre	0.4	0.99	mg/dL
	UA	4.9	5.4	mg/dL
	Na	142	141	mEq/L
	K	4.1	4.2	mEq/L
	Cl	102	102	mEq/L
Lipids	LDL	96	161	mg/dL
	TG	82	170	mg/dL
	HDL	69	73	mg/dL
Glucose	Glu	112	104	mg/dL
	HbA1c	-	5.7	%
CBC	WBC	53	59	x10`2
	RBC	439	463	x10`4
	Hb	13.7	13.8	g/dL
	Ht	40.7	41.7	%
	MCV	92.8	90.1	fL
	MCH	31.1	29.7	pg
	MCHC	33.6	33	%
	Plt	24.2	35.7	x10`4

Treatments and Clinical Progress

She was diagnosed as i) mixed migraine/tension headaches and ii) decreased activity and balance of autonomic nerve. Consequently, we have set treatment goal to relieve tension in the body and mind. The methods included i) obtaining the information from the case about actual daily lifestyle, reviewing it and improving to reasonable situation, and ii) conducting manipulative treatment to improve autonomic nerve balance. The specific methods are summarized in Table 2. The actual treatment included 9 items and was continued for a year. These factors can be categorized into physical aspect [1-7] and psychological aspect [6-9]. These treatments mentioned above had been continued. After one month, she showed the changes that resting pulse was decreased in the 90's beats per minute range and headaches were reduced. In 3 months, resting pulse decreased to 80's /m and headache was disappeared associated with controlling headache well. In 6 months, pulse rate became in the 70's/m and she could forget the presence of headache that had bothered for long. Consequently, she can now train herself towards her next novel goal. As 1 year later, her blood chemistry was shown in Table 1, and her result of autonomic nerve exam was shown in Figure 1b. Her current autonomic condition has been improved for satisfactory degree.

Table 2: *Actual treatment for autonomic nerves.*

1) Purpose:
① Release body tension
② Make easier to breathe and slow the pulse
2) Method:
① Shake your body
② Hot towel for neck and eyes
③ Manipulate to improve spine/scapula movements
④ Massage to loosen the muscles of neck and chest
⑤ Give adequate guidance on how to breathe
⑥ Change thinking causing headache with mindset
⑦ Relax the back with tennis ball before sleeping
⑧ Stretch back with half poles simultaneously
⑨ Look at the sky regularly to refresh your mind

Discussion

Headache has been common and crucial health problems for many people for years. According to the standard guidelines, various types of headache would exist. Among them, migraine, tension-type headache (TTH), and mixed type have been common and known [6]. In order to provide adequate management, using a migraine calender associated with Hospital Anxiety and Depression scale (HAD) would be recommended.

Systematic reviews were conducted concerning the effect of manual therapy (MT) and exercise for the patients with primary headache. The study included 31 systematic reviews with 79 trials and 9103 cases. Among 23 MT-related reviews, enhanced effects were reported in 11 reports in comparison with usual care [7]. However, there were general heterogeneity and also bias risk. Concerning MT effectiveness for reducing pain degree, cases with TTH showed moderate quality of statistical evidence. Another systematic review was conducted for the efficacy of MT on frequency and degree of headache. The cases were patients with TTH. Totally 15 studies were analyzed with 1131 cases [8]. As a result, soft tissue intervention showed superiority on decreasing pain frequency (-1.45 SMD) and intensity (-0.86 SMD) compared with no treatment situation. In contrast, thrust manipulations by high velocity/low amplitude did not show efficacy for decreasing pain frequency and intensity for cases with TTH.

In the current case, authors have compared the autonomic nerve exam before and after treatment. As a result, her pulse rate was gradually decrease to normal degree for several months. Especially, autonomic nerve balance, activity and stress resilience (SR) were improved by our continuous treatment for autonomic nerve (Table 2). In usual clinical practice, autonomic nervous system exam has been used for the evaluating the function of the balance for sympathetic nerve and parasympathetic nerve stimulation [9].

In order to compare autonomic cardiac function for patients with migraine and TTH, heart rate variability (HRV) was measured and analyzed [10]. The protocol includes two groups of each 25 cases. Among various biomarkers, chronic THH group showed higher high frequency (HF) than migraine group, with 1191 vs 832 ms2 and p=0.148. Further, total power of THH showed higher value than migraine group with 2448 vs 1845 ms2, p=0.308).

Some limitations are present in this study. The case report describes one case, who showed satisfactory clinical efficacy of autonomic nerve exam by providing several methods for make relation physically and psychologically. The reason is not necessarily due to our treatment, and other factors may exist. The case is required to be followed up in the future, from several points of view.

In summary, 40-year-old female was presented, who showed improvement of autonomic nerve exam by continuous autonomic nerve treatments. A series of practice for autonomic nerve may

have efficacy from physical and psychological points of view. It is expected that this report will become a reference for development of medical research and practice.

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