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Using Transcutaneous Electrical Nerve Stimulation to Prevent Post Herpetic Varicella Zoster Neuralgia

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Abstract: Post Herpetic Neuralgia (PHN) is a common and painful complication of Varicella zoster (VZ). Antivirals are used frequently to reduce pain in acute form and prevent PHN. Transcutaneous electrical nerve stimulation (TENS)is used for many years in reduction of PHN. We aimed to evaluate the effects of TENS and compare it to antiviral therapy in treating VZ.We evaluated 191 patients, 96 in antiviral and 95 in TENS group, in a prospective study. The severity of the pain and duration of PHN was recorded. Patients followed up until 6 month or until the pain goes away.Although the pain severity in acute herpes zoster was not different in two groups, but the majority of patients that had no PHN was treated with TENS and 49 (out of 95) patients who was treated with TENS had no PHN.Our study suggests the possibility of using TENS as an effective treatment of acute Varicella zoster. It may be more effective than antiviral therapy to prevent PHN.

Key words: Transcutaneous Electric Nerve Stimulation · Varicella Zoster Virus · Post Herpetic Neuralgia

INTRODUCTION

Varicella zoster is the most common viral infection in many parts of the world [1]. Herpes zoster virus is the reactive form of Varicella zoster virus that is known as shingles. It affects 500000 people in the United States every year [2] and is related to a considerable work day loss and reduction in effectiveness in employees [3]. It is characterized with painful rashes in a dermatome and the pain may persist after the rashes disappear, due to the damage to sensory nerves and is called Post Herpetic Neuralgia (PHN) [4]. This complication is common and painful.There are various treatments for PHN, but no treatment is proved to be the best and 100% effective so most patients with PHN don't receive evidence based medication for PHN [5]. Antiviral agents are used frequently to reduce pain in acute form and prevent PHN. Corticosteroids are believed to reduce pain only in acute form[4]. Recent studies believe that corticosteroids may reduce PHN either [6]. These treatments are usually not enough and patients demand other medications to reduce pain along with these medications. Topical agents, like lidocaine patches and capsaicin, various antidepressants and anticonvulsants and opioids are among these medications [4].

Electrical stimulation, as a conservative therapy, is used for many conditions [7-9]. Transcutaneous electrical nerve stimulation (TENS) is used in general medicine for many years to reduce pain in various acute and chronic conditions like postoperative pain, dysmenorrhea,low back pain and shoulder pain [10-12]. TENS is an electrical devise that delivers electrical current to the surface of the skin. It is used for many years in reduction of PHN [13], but there are a few studies that focus on TENS as a treatment for pain induced by Varicella Zoster [14, 15]. And there is no big prospective study to evaluate the therapeutic effect of TENS.

The aim of the current study was to bring a good understanding to physicians for using TENS to prevent post herpetic Varicella Zoster neuralgia.

MATERIALS AND METHODS

This study was a prospective randomized control trial (RCT), on 205 patients with Herpes zoster infection referred tobeheshti hospital. The study was conducted in 2002 to 2013. Only patients that were referred during the 72 hours of presentation of rash were included. The whole study protocol was confirmed by Kashan University of Medical Sciences Ethical Board. Patients that needed

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hospital admission due to severity of the disease and patients more than 80 years old were excluded from the study. From 201 patients 2 excluded because they were hospitalized, one for generalized infection and a positive HIV history and one for corneal infection. Patients with pacemaker, rashes in anterior neck and carotid sinuses and also pregnant patients were also excluded. All 196 patients entered the study after signing a written consent. They received an antiviral therapy (acyclovir 800 mg five times a day for 1 week) or TENS. All data including age, sex and location of rash, were recorded and patients received a number from 1-196 by the first doctor. Patients referred to another physician for therapy. Odd numbers received antiviral and even numbers received TENS. For pain control, the physician used no analgesic if the pain was mild,paracetamol for moderate and NSAIDs and/or tramadol for severe cases(painkillerswere used for determination of severity of the pain). Patients were followed up by the third doctor, to make a blind study, until 6 month or until the pain goes away. Data of 2 patients from antiviral therapy group and 3 patients from TENS grouphave been omitted because we couldn't follow up information. Remained 191 patients, 96 in antiviral and 95 in TENS group. Presence of pain or pain severity and time of pain remission were also recorded. Data entered SPSS software version 11.5 and data were compared using descriptive tests, chi-square test or t-test.

RESULTS

The mean age of patients enrolled was 41.49 years (SD=18.11). 92 of patients (48.2%) were male and 99 (51.8%) were female. 83 of patients (43.5%) had rashes localized on thorax, 52 (27.2%) had rashes on head and neck, 37 (19.4%) had rashes localized on extremities and 19 (9.9%) had rashes localized on lumbar and abdomen. 57 of patients (29.8%) had no post herpetic neurolgia, 76 (39.8%) had PHN less than 6 month and 58 (30.4) had PHN more than 6 months. 49 (25.6%), 71 (37.2%) and 71 (37.2%) patients had mild, moderate and severe pain, respectively. Sex, location of the rashes and pain severity of the disease were not significantly different between two study groups (all p values >0.05) (Tables1 and 2) but duration of PHN wasmuch shorter in the TENS group (p value<0.001). (Table2).

DISCUSSION

This study investigated the effects of TENS on pain severity and the length of PHN, a common complication of patients with acute Herpes zoster. Although the pain severity in acute herpes zoster was not different in two groups, but the majority of patients that had no PHN was treated with TENS and 49 (out of 95) patients who was treated with TENS had no PHN. According to our results, TENS wasas effective as antiviral therapy for pain

Table 1: Demographic data of patients with Herpes zoster infection in the two study groups

Group		Antiviral	TENS	total	P value
Number (%)	96 (50.3)	95 (49.7)	191 (100)		
Sex	Male (%)	46 (50)	46 (50)	92 (100)	0.944
	Female (%)	50 (50.5)	49 (49.5)	99 (100)	
Age	mean	42.37	40.60	41.49	0.402
	SD	17.48	18.77	18.11	
Location	Head and neck (%)	26 (50)	26 (50)	52 (100)	0.407
	Thorax (%)	39 (47)	44 (53)	83 (100)	
	Lumbar/abdomen (%)	13 (68.4)	6 (31.6)	19 (100)	
	Extremities (%)	18 (48.6)	19 (51.4)	37 (100)	

Table 2: Pain severity and PHN in patients with Herpes zoster infection in the two study groups

Group		Antiviral	TENS	Total	P value
Pain severity	Mild (%)	32 (65.3)	17 (34.7)	49 (100)	0.051
	Moderate (%)	32 (45.1)	39 (54.9)	71 (100)	
	Severe (%)	32 (45.1)	39 (54.9)	71 (100)	
PHN	No PHN (%)	8 (14)	49 (86)	57(100)	<0.001
	Less than 6 month (%)	38 (50)	38 (50)	76 (100)	
	6 month or more (%)	50 (86)	8 (14)	58 (100)	

reduction and wasbetter than antiviral therapy in preventing PHN. Although women were slightly more infected in our study (52%) but in other studies women tended to be infected more than men [16, 17]. The most frequent region for rashes was thorax, as other studies mentioned [16-19].

Antiviral therapies are expensive and finding an alternative treatment for varicella zoster and preventing PHN is quite important. A study by Kolšek [14] evaluated the use of TENS in varicella zoster patients. The study was retrospective and was limited in patient number. But hestudied the patients that used antiviral and TENS at the same time, too. In the mentioned study all patients treated with TENS were completely prevented from PHN, but we consider it as a population size bias as they studied only 29 patients who were treated with TENS. Pain severity was evaluated based on the use of analgesics by the patients. Other more accurate scales like VAS system would be a better way. And we recommend it for future studies.

None of the patients used either kinds of treatment noted a considerable side effects. Although antiviral therapy is somehow a safe treatment, but using it at several times a day and for long period of time may be considered annoying. Using TENS may result in a more convenient way to reduce pain, as our study suggests as effectively as antiviral therapy, but other medications also should be evaluated in comparison with TENS. Studies focusing on combination therapy of TENS with antiviral, antidepressants, anticonvulsants and other kinds of treatment; to reach an ideal way to handle PHN is also recommended.

Our study suggests the possibility of changing the acceptance and use of TENS as an effective treatment of acute Varicella zoster. It may be more effective than antiviral therapy to prevent PHN.

REFERENCES

1. Sabra Sherifa, M., R. Omar Sherif and M. Abdel-Fattah Moataz, 2012. Surveillance of Some Common Infectious Diseases and Evaluation of the Control Measures Used at Taif, KSA (2007-2011). Middle-East Journal of Scientific Research, 11: 709-717.
2. Roxas, M., 2006. Herpes zoster andpostherpetic neuralgia: diagnosis and therapeutic considerations. Altern. Med. Rev., 11: 102-113.
3. Drolet, M., M.J. Levin, K.E. Schmader, R. Johnson, M.N. Oxman, D. Patrick, S.O. Fournier, J.A. Mansi and M. Brisson, 2012. Employment related productivity loss associated with herpes zoster and postherpetic neuralgia: a 6-month prospective study. Vaccine., 30: 2047-2050.
4. Sampathkumar, P., L.A. Drage and D.P. Martin, 2009. Herpes zoster (shingles) andpostherpetic neuralgia. Mayo Clin Proc., 84: 274-280.
5. Dworkin, R.H., C.J. Panarites, E.P. Armstrong, D.C. Malone and S.V. Pham, 2012. Istreatmentofpostherpetic neuralgiain the community consistent with evidence-based Recommendations? Pain., 153: 869-875.
6. Han, Y., J. Zhang, N. Chen, L. He, M. Zhou and C. Zhu, 2013. Corticosteroids for preventingpostherpetic neuralgia. Cochrane Database Syst Rev., 28; 3: CD005582.
7. Ahmed, A.R., 2011. Efficacy of low-frequency electrical stimulation and massage in treatment of plantar heel pain. World Applied Sciences Journal, 13: 1927-1932.
8. Alghamry, S.A., 2011. Effectiveness of Physical Rehabilitation and Electro-Stimulation after Hip Joint Replacement Surgery. World Journal of Sport Sciences, 4: 41-47.
9. Samhan, A.F., N.M. Abd-Elhalim, E.H. Elnegmy, R.K. Elnaggar and W.S. El-din Mahmoud, 2012. Efficacy of Parasacral Transcutaneous Electrical Nerve Stimulation in Treatment of Children with Overactive Bladder. World Applied Sciences Journal, 18: 343-348.
10. Robertson, V. and D. Spurritt, 1998. Electrophysical agents: Implications of their availability and use in undergraduate clinical placements. Physiotherapy., 84: 335-344.
11. Alizadeh, M.H. and S. Ahmadizad, 2009. A Comparison of Exercise Therapy and Transcutaneous Electrical Nerve Stimulation for the Treatment of Chronic Low Back Pain World Journal of Sport Sciences, 2: 43-47.
12. Yamany Abeer, A. and E. Salim Samir, 2011. Efficacy of Low Level Laser Therapy for Treatment Myofascial Trigger Points of Shoulder Pain World Applied Sciences Journal, 12: 758-764.
13. Nathan, P.W. and P.D. Wall, 1974. Treatment of post-herpetic neuralgia by prolonged electric stimulation. British Medical Journal., 3: 645-647.

14. Kolšek, M., 2012. TENS- an alternative to antiviral drugs for acute herpes zostertreatment and postherpetic neural giaprevention. Swiss Med. Wkly., 17(141): 13229.
15. Ahmed, H.E., W.F. Craig, P.F. White, E.S. Ghoname, M.A. Hamza, N.M. Gajraj and S.M. Taylor, 1998. Percutaneous electrical nerve stimulation: an alternative to antiviral drugs for acute herpes zoster. Anesth Analg., 87: 911-914.
16. Insinga, R.P., R.F. Itzler, J.M. Pellissier, P. Saddier and A.A. Nikas, 2005. The Incidence of Herpes Zoster in a United States Administrative Database. J. Gen. Intern Med., 20: 748-753.
17. Stankus, S.J., M. Dlugopolski and D. Packer, 2000. Management of herpes zoster (shingles) and postherpetic neuralgia. Am. Fam Physician., 61: 2437-2448.
18. Ahčin M and Kristan M, 1987. Zdravljenjezostra s transkutanoelektričnoblokado (Treatment of zoster with transcutaneus nervous block). Zdrav. Vestn., 6: 459-462.
19. Wareham, D.W. and J. Breue, 2007. Herpes zoster. BMJ., 334: 1211-1215.