

Ocena roli wcześniejszego przygotowania fizjoterapeutycznego w aspekcie zastosowania TENS podczas porodu u pierwiastek

Evaluation of the importance of previous physiotherapeutic preparation in aspect of using TENS during childbirth among primiparous

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Streszczenie:

Wstęp. Stosowanie TENS podczas porodu staje się coraz bardziej popularne choć doniesienia na temat jego skuteczności są sprzeczne. Za cel pracy postawiono sobie określenie jaka jest skuteczność podczas porodu przezskórnej elektrostymulacji nerwów z zastosowaniem przenośnego aparatu bez konsultacji w porównaniu z zastosowaniem tej terapii przy wcześniejszym przeszkoleniu i przy udziale fizjoterapeuty.

Materiał i metody. Badaniami objęto 30 pierwiastek. W tym 18 kobiet, u których rozpoczęcie zabiegu poprzedzał opis sposobu działania elektrostymulatora oraz zapoznanie ich z obsługą aparatu przez fizjoterapeutę oraz 12 pacjentek, które we własnym zakresie zakupiły aparaty do elektrostymulacji. Przeprowadzono autorski wywiad kwestionariuszowy i opisano obserwacje zespołu badawczego oraz personelu uczestniczącego w porodach.

Wyniki. U 94,43% pierwiastek z grupy objętej szkoleniem fizjoterapeutycznym oraz 50% pacjentek bez konsultacji, TENS w mniejszym lub większym stopniu niweluje ból porodowy. W grupie pacjentek po szkoleniu odnotowano tylko jeden przypadek podania farmakologicznego leku przeciwbólowego. Natomiast w grupie bez konsultacji odsetek wyniósł 25%.

Wnioski. Terapia przeciwbólowa TENS jest skuteczniejsza jeśli została poprzedzona odpowiednim szkoleniem lub instruktażem fizjoterapeutycznym z zakresu obsługi i działania aparatu. Pacjentki po przeszkoleniu fizjoterapeutycznym wykazywały się większą znajomością sposobu działania i obsługi aparatu do terapii TENS niż pacjentki które ominęły ten etap.

Słowa kluczowe:

ból, poród, TENS

Abstract

Introduction. For the purpose of the study has set the definition of what is the efficacy of transcutaneous electrical stimulation of nerves during labor using a portable apparatus without consultation over the use of this therapy by prior training and participation of a physiotherapist.

Materials and methods. The study included 30 primiparous. In the 18 women who start treatment preceded by a description of how the action electrostimulator by a physiotherapist, and 12 patients who have purchased their own devices for electrostimulation.

Results. In 94.43% of the primiparous of the training covered by a physiotherapist, and 50% of patients without consultation, TENS to a lesser or greater extent eliminates the pain of childbirth. In the group of patients after the training has been only one case of pharmacological analgesic administration. However, in the group without consulting the percentage was 25%.

Conclusions. TENS pain therapy is more effective if it is preceded by appropriate training or physiotherapy consultation regarding the use of the TENS machine. Patient after physiotherapy training showed a greater knowledge of the mode of action and use the apparatus to TENS therapy than patients who missed this stage.

Key words:

pain, childbirth, TENS

Background

1965 was a highlight for using TENS stream (Transcutaneous Electrical Nerve Stimulation) because of publishing Melzack R. and Wall P.D. work which was about the gate control theory of pain [1]. This theoretical substantiation of using TENS. This method, thanks to effective analgesic work both in sharp form and in chronic form quickly became the basic and standard method in fighting with pain [2]. TENS is a variant of electro stimulation which uses impulse streams with low frequency in range from 1 to 200 Hz [3].

The specific character of childbirth pain makes it hard topic for discussion, particularly when it comes to methods of overcoming it. Many of researches in VAS scale (Visual Analog Scale) show that 20% of people who give birth describe the pain as unbearable and 60% as very tough so all those discussions and researches are very well-founded and also necessary [4]. The perfect medicine should be familiar for its fast actions after taking it, very good analgesic result in first and second period of childbirth which has no negative influences for mother and fetus. The medicine should block in some grade conductivity in sensory fibers but still keeping the conductivity in motor fibers and at the same time – do not handicap mobility of the person who's giving birth and her activity during the process. [5, 6, 7].

It may seem that for TENS working in the highest level according to mentioned features, its usage and application should be conducted by an experienced physiotherapist. But – easily accessible and wide range of the machines that are used for TENS therapy makes that it is often used without well-qualified person. The question that appears is: what is the effectiveness through-skin electro stimulation streams during childbirth while using mobile machine in comparison to using this therapy with previous training and participation of a psychotherapist. It's also interesting what is the role of psychotherapist in the process of preparing and explaining to the patient how TENS works. Are the psychotherapists menaced with the marginalization when it comes to their actions with this method of fighting with childbirth pain? The effect of those analyses would be the possibility of defining the role of psychotherapist in safe and effective usage of TENS during childbirth.

Material and methods

The researches were conducted on a group of 30 women. Patients were divided into two groups. In the first one there were 18 women that (before the procedure were started) were introduced to the description of how the electro simulator works and explained how the machine works, all by the psychotherapist. The second group were 12 patients that bought the machines on their own and used it during the childbirth (with the permission of their doctor).

In the first group average age was 27,9 years. In the second group, average age was 26,9 years.

The service of the machine in most of the time were conducted by the woman who was giving birth. In the first group: 88,89 %. In the second group: 83,34%. But occasionally the psychotherapist was the person who was using the machine or the person who accompanied during childbirth. In each of these childbirths there was a person from researchers group. All the patients used the machines of the same company and exactly the same treatment parameters.

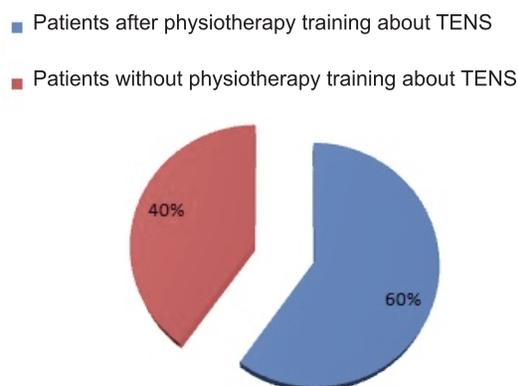


Fig.1. The percentage of patients included in the study summary

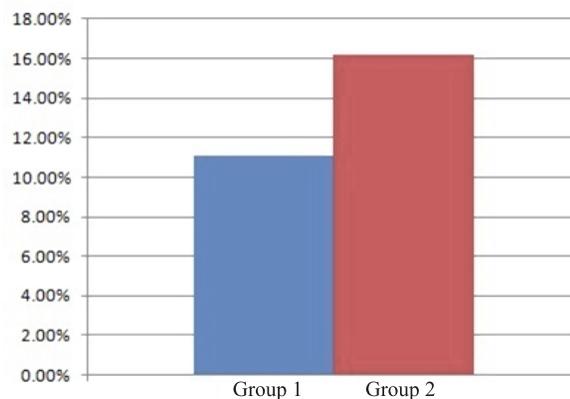


Fig. 2. Summary of the respondents, who resigned from the use of the machine themselves

Especially important is the layout of the electrodes during TENS procedure in the perinatal period. Two of them need to be placed on both sides of the spine on the level of Th10 circle, Th11, Th12, L1 in space of 6cm from each other. Next, two need to be placed in space about 10 cm from each other near circles S2, S3, S4. The size of used electrodes is: 40x90 mm.

The patient sets the intensity on her own and during the whole time of work of the machine could change it according to her own feelings. During electro stimulations the patient (according to the kind and intensity of the pain) was setting the intensity of the machine. Each of the program had two kinds of stimulation: A and B. The first one (A) was used in the breaks between the contractions (high frequency and low intensity), the second one (B) was used in the phase of the contraction (low frequency and high intensity). Next, using only one button, the person who was giving birth, was changing the type of the electro stimulation under the electrodes. During A stimulation in the fluid of spinal cord increases concentration of endorphins and stimulation B causes stopping the pain according to the "theory of the gate pain" [8, 9, 10].

The description of the pain feelings was prepared according to the evaluation of intensity of pain disorder in six different moments of therapy. There was used a modified numeric sca-

le. The results that were made because of the scale were multiplied by 10 causes the result in range 0-100. This procedure was used to get more clear results presentation.

Moreover, after each childbirth there were opinions, suggestions and notices of the medical personnel gathered (all about the painkilling therapy TENS in the near-birth period).

Results

The most important task for the psychotherapists was to reliably and precisely train the patients from the second group in using the TENS machine (how it works – so that they feel safe and secure during electro stimulation). The chart below shows the evaluation of how the knowledge was passed to the patient and about it essential value – how to service the machine and how it works) in the group 1.

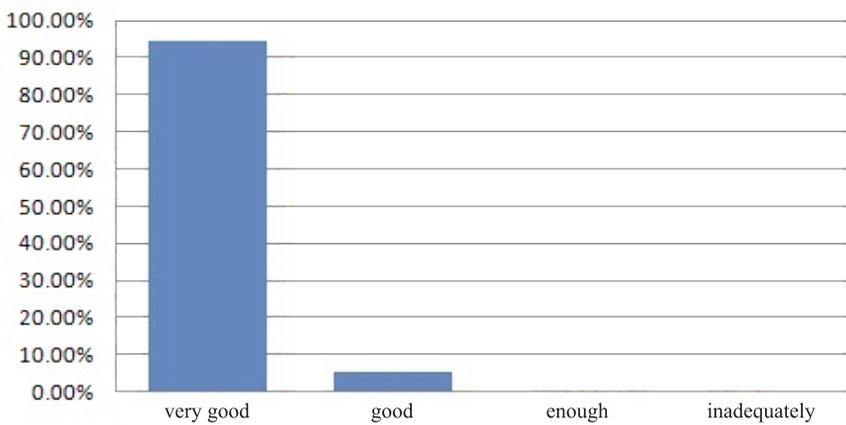


Fig.3. Assessment of reliability and transmission information on the use and operation of the TENS machine.

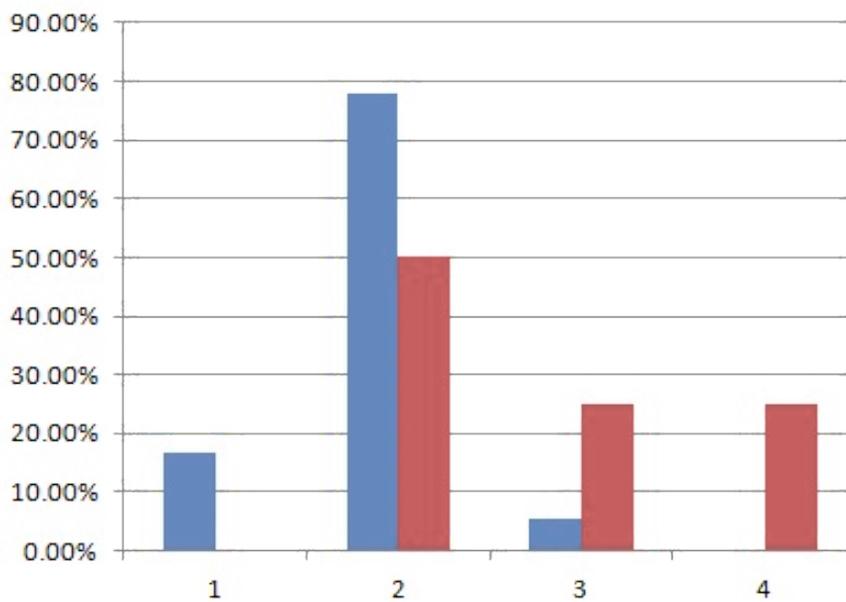


Fig. 4. Quantitative summary of the patients in order to evaluate the effectiveness of TENS during labor:

- 1 – TENS treatment are very helpful, definitely relieve pain,
- 2 – TENS treatment are helpfull, the pain subsides part,
- 3 – TENS treatment do not help, the pain remains unchanged,
- 4 – TENS treatment do not help, the pain is more intensive.

It should be also mentioned that all the women that were researched had never used the electro stimulation (TENS method) before. When we compare it to the results saying about the service of the machine it is stated that it is uncomplicated and easy to understand for the patient.

The results of conducted researches show that 16,66% in the group 1 think that procedures with TENS are very helpful and definitely sooth the pain. No one from group 2 pointed this answer.

However the most satisfying percentage is in the group of researched people that say that TENS help and the pain goes away (in some part). In the group 1 it is 77,77%. However in the group 2 it is 50%. For all those results it is characteristic that they have positive opinion about the work of electro stimulation TENS, in greater or smaller grade. After summing them up it shows: In the first group – 94,43% researched primiparous, in the second group 50% researched primiparous, say positive opinion about TENS work.

The results from the patients that stated that childbirth pain stays the same looks like that: In the first group is 5,50%. However in group 2 it is 25%..

It is crucial to put more attention to the fact that none of the women from group 1 stated that “TENS procedure don’t help and pain gets more intensive”. It is different among women from 2 group where 25% women said that TENS procedures don’t help and pain gets more intensive.

Important result of the researches was percentage describing usage of pharmacological painkillers among researched patients. In the first group there were only one case of giving pharmacological painkiller. In the group 2 there were stated 3 cases of giving pharmacological painkiller which is 25%.

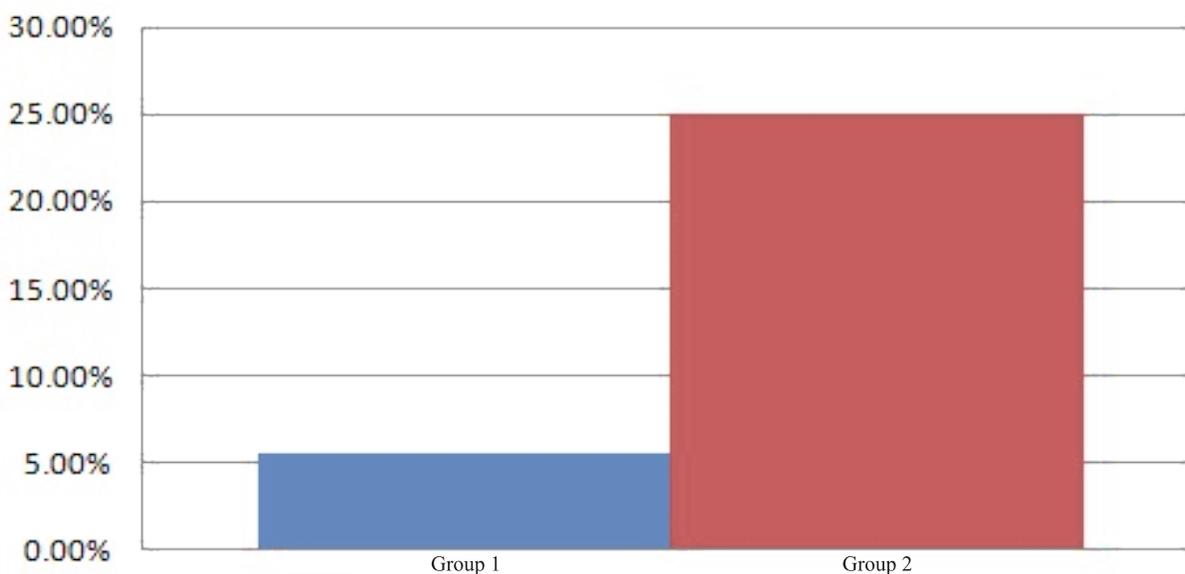


Fig.5. Summary studied for analgesic use

Also, the important aspect is the source from which women found out about the possibility of using TENS therapy during childbirth. 70% among all respondents received information about the possibility of using TENS analgesic therapy from a physiotherapist. 20% of them had heard about this form of struggle with pain at school birth classes, and 10% on online forums. All persons informed by the birth school and websites were a group of patients who have not undergone prior training physiotherapy.

Discussion

All those results let think that painkilling electro stimulation with TENS method in near-birth period lower the pain in more or less grade in researched women. This effect is particularly evident in patients who have been previously trained by a physiotherapist. The importance of consultations and physiotherapy applies not only to the unit of obstetrics. In other briefings and prepare in advance by a physiotherapist for treatment improves the quality of care and increase patients awareness [11, 12].

TENS method applied early allows you to reduce or even avoid the use of pharmacological agents to reduce labor pain. The condition is the use of early and appropriate manner. In countries such as the United Kingdom and the United States promotes TENS as an alternative to pharmacological analgesia due to the possibility of their negative impact on the emerging and child [13, 14, 15]

Personnel involved in the birth noticed that patients are not always able to explain what is TENS pain therapy is and how it work. They talk about their sensations rather than of the actual mode of action electrostimulator. It was also noted that patients did not know where to put apparatus in order not to interfere in labor and personnel during childbirth. In any case it did in patients who had no prior training of the machine. Tested that had no contact with the physiotherapist also did not know that it is also suitable for use in other pain symptoms [16, 17].

From the observation of the research team involved in the birth shows that most women with physical therapy no covered by the consultation could not in the correct way and in the right place to put electrodes. In 2 cases the patient glued them itself. Despite their large size, they should be as carefully glued under the terms of safety. This determines the analgesic efficacy of TENS.

Conclusions

1. Painkilling therapy TENS is more effective when it was preceded with a training or consultation with a psychotherapist (on how to use and how the TENS machine works)
2. Patients after psychotherapist training showed greater knowledge on how to use the machine for TENS therapy than patients who cancelled this step.

3. Proper knowledge and proper service skills let for proper usage of the machine and its analgesic actions and let avoid usage of pharmacological painkillers.
4. Appropriately sooner psychotherapist training let reduce negative feelings and ailments caused by inappropriate machine service.

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Piśmiennictwo/ References

1. Melzack R, Wall PD. Tajemnica bólu. WAM, Kraków, 2006
2. Orzech J. 150 lat elektrostymulacji. Rozwój technik elektrostymulacji w latach 1855-2005. *Fizjoterapia Polska*. 2006; 3(4); Vol. 6, 185 – 191.
3. Kahn J. Elektroterapia. Wydawnictwo Lekarskie PZWL, Warszawa, 1996, 2002.
4. Klimka R. Położnictwo. DREAM, Kraków, 1999
5. Furmanik J. Labour epidural analgesia in Poland in 2009 — a survey. *Anestezjologia Intensywna Terapia* 2013, tom XLV, nr 3, 157–160
6. Wuitchik M, Bakal D, Lipshitz J 1990, Relationships between pain, cognitive activity and epidural analgesia during labor, *Pain*, 41: 125-132
7. Carr DB, Mayzner-Zawadzka E, Lipkowski AW, Kosson D, Klinowiecka A, Kosson P, Bonney I. Intrathecal antinociceptive interaction between the NMDA antagonist ketamine and the opioids, morphine and bupivacaine. *European Journal of Pain*. Volume 12, Issue 5, pages 611–616, July 2008
8. Gersh M.: Transcutaneous electrical nerve stimulation (TENS) for management of pain and sensory pathology. *Electrotherapy in rehabilitation*. F.A. Davis Company Philadelphia 1992, 149 - 195.
9. Scully RM, Barnes MR.: *Physical Therapy*. J.B. Lippincott Company, Philadelphia 1989, 883 – 886
10. Bender T, Nagy G, Barna I, Tefner I, Kádas E, Géher P. The effect of physical therapy on beta-endorphin levels. *European journal of applied physiology*, 2007
11. Bal-Bocheńska M, Kądziołka W, Kądziołka J. Ocena skuteczności fizjoterapii przygotowawczej do leczenia operacyjnego mięższu płucnego prowadzonej w warunkach domowych i szpitalnych. *Kardiochirurgia i Torakochirurgia Polska*. - 2009, vol. 6, nr 2, s. 191-197
12. Warchol-Sławińska E, Mazurkiewicz P, Włoch K, Bojar I. Rola fizjoterapeuty w rehabilitacji chorób kręgosłupa lędźwiowego u osób leczonych w szpitalu i sanatorium. *Prob. Hig. Epidemiol.* 2007, 88(2): 221-223
13. Poole JH. Analgesia and Anesthesia During Labor and Birth: Implications for Mother and Fetus. *Journal of Obstetric, Gynecologic, & Neonatal Nursing* Volume 32, Issue 6, pages 780–793, November 2003
14. Enzelsberger H, Skodler WD, Kubista E. (1991) Improvement of Doppler ultrasonography findings following transcutaneous electrostimulation in women with placental insufficiency. *Zeitschrift für Geburtshilfe und Perinatologie* 195 (4), 172–175
15. Dowswell T, Bedwell C, Lavender T, Neilson J. P. Transcutaneous electrical nerve stimulation (TENS) for pain relief in labour. *Cochrane Database of Systematic Reviews*, (2009) Issue 2. Art. No.: CD007214. DOI: 10.1002/14651858.CD007214.pub2.
16. Arvidsson I, Eriksson E. Postoperative TENS pain relief after knee surgery: objective valuation *Orthopedics* [1986, 9(10):1346-1351]
17. Robertson V, Ward A, Low J, Reed A. *Electrotherapy explained. Principles and practice*. Urban & Partner, 2009