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Effect of Posterior Tibial Nerve Stimulation on Fecal Incontinence among Geriatrics

Agalya.S, KumaresanAbathsagayam*, Santhana Lakshmi Sivakumar, Surya Vishnuram, Prathap Suganthirababu, Vignesh Srinivasan, Vinodhkumar Ramalingam, & Buvanesh Annadurai

Saveetha College of Physiotherapy, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamilnadu, India.

***Email:** kumaresan.scpt@saveetha.com

Abstract

Incontinence is one of the most common causes for admission to a residential facility. Fecal incontinence becomes more prevalent at the age of 70. In both men and women, fecal incontinence is a common condition, particularly among the elderly. Although a few research suggests that posterior tibial nerve stimulation can aid with fecal incontinence, more research is needed. Preoperative and postoperative measures are compared to determine treatment outcomes. Thus, the goal of this research is to see how posterior tibial nerve stimulation affects fecal incontinence in geriatrics. The research was conducted as a pilot study at SIMATS, using samples taken from Saveetha hospital's neuro IPD and physiotherapy OPD. A total of 15 patients were chosen at random based on the inclusion and exclusion criteria. The research included both geriatric men and women with fecal incontinence who were examined using the Wexner score prior and after intervention. The posterior tibial nerve was stimulated with electrical stimulation twice a day for 4 weeks. The occurrence of incontinent episodes in geriatric individuals was drastically decreased, with a significant value of $p<0.001$. The use of posterior tibial nerve stimulation in the elderly has been proven to be a successful therapy technique for reducing fecal incontinence episodes. In terms of treatment, the findings of this study seem promising.

Keywords

Fecal incontinence, posterior tibial nerve stimulation, geriatrics

Introduction

The term "elderly" has traditionally been described as someone aged 65 and up, with those aged 65 to 74 being known to "early elderly" and those aged 75 and up being known as "late elderly" (Orimo et al., 2006). Due to variances in genetics, lifestyles, and overall health, however, the ageing process is not universal across the population (Singh et al., 2014). “The involuntary flow of feces through the anus” is known as fecal incontinence. The combination of fecal and urine incontinence is the main reason requiring hospital. The anal tract and rectum's structure and biology, as well as changes that occur with ageing, are briefly reviewed good comprehend the medical description, examination, and medical intervention for fecal incontinence. The rectum is a muscular tube with a length of 12 to 15 cm. The dentate line

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divides the anal canal into an upper jejunum and a subcutaneous portion. The internal urethral sphincter's layer thickens throughout age, increasing from 2.4 to 2.7 mm in people under 55 to 2.8 to 3.4 mm in people over 55 (Tariq et al., 2004).

The International Continence Society defines anal incontinence as "any uncontrolled leakage of human feces and/or gases," which could be categorized as fecal or gas leaking. The etiology of fecal incontinence is frequently complex: The four categories of physio-pathologic mechanisms are structure neuromuscular, or visceral problems; metabolic anomalies (urogenital hypersensitivity alterations, fecal changed the way); feces features (texture, amount, or regular variations; inclusion or lack of allergens); or additional methods (Fernandez et al., 2019). Fecal incontinence is frequent, affecting 3–21% of society senior persons with age over 65. The frequency is greater than 50% in the institutionalized elderly population. Fecal incontinence is an emotionally and socially damaging condition that causes silent agony, worry, fear of disgrace, and separation (Tariq et al., 2004).

Prevalence estimates range from 1.4 percent to 19.5 percent in the community-based adult population. The frequency and a severity are increasing in elderly culture, fecal incontinence is projecting to become a bigger problem. Furthermore, fecal incontinence is humiliating, generating a considerable dissatisfaction that could also result in dehumanization, loneliness, and a low sense of self-worth, all of which have serious consequences for patients' quality of life. A large proportion of individuals may benefit from conservative treatment, such as dietary changes, constipating drugs, lifestyle guidance, biofeedback, and pelvic floor exercises. Nerve stimulation may involve Higher brain areas or better perineal canal portrayal with in primary motor cortex may be involved, resulting in increased control of discomfort and a good standard of living (Dedemadi et al., et al 2018).

Metzalk and Wall first utilized the technique to treat pain, PTNS for the first time in 1983 to treat overactive bladder and urine urge incontinence [6]. PTNS is less expensive and doesn’t involve the installation of long-term implants through surgery. A parenteral method with either a needles conductor or a transdermal technique with a surface electrode are both viable options for PTNS application (Fernandez et al., 2019).

To assess the degree and frequency of incontinence, as well as its consequences on quality of life, the Wexner score, an incontinence grading system, should be used. The treatment outcomes are determined by comparing preoperative and postoperative parameters. Such assessments might be carried out on a single patient or across multiple facilities. A questionnaire may also aid in the finding of etiology (Jorge et al., 1993). The Wexner score is made up of three items about incontinence type and frequency (each rated from zero to four) and three items about pad usage and lifestyle adjustments (each scored from zero to four) (Li et al., 2012).

Methodology

Participants and selection criteria

The research was conducted as a pilot study at SIMATS, using samples taken from Saveetha hospital's neuro IPD and physiotherapy OPD. A total of 15 patients were chosen at random based on the inclusion and exclusion criteria. The research included both geriatric men and women with fecal incontinence who were examined using the Wexner score before and after treatment. In this study, patients aged 60 and older, of both genders, with difficulty to control

bowel motions and a Wexner score of 3 or 4 were included. Patients who did not want to participate in the study, patients with colon protrusion, active IBD, pregnancy, spinal damage, and or neurological disorders, patients with recent surgeries or injuries, and patients with metal implants or pressure sores over the sacral region were all excluded.

Procedure

The technique was thoroughly described to the patient, who signed the consent form for treatment. Patients were given electrode pads measuring fifty millimeter × fifty millimeters to stimulate the posterior tibial nerve. The inactive electrode was positioned over the foot, while the active electrode was positioned posterior and proximal to the medial side (metatarsal area). Four electrodes are used to stimulate the bilateral leg (quadripolar method). Continuous stimulation at the frequency was set to 10 Hz with a pulse width of 200 µs was applied. The amplitude was chosen to provide sensory feedback in the patient's ipsilateral foot at a level that was bearable. The posterior tibial nerve was stimulated with electrical stimulation twice a day for 4 weeks.

Results

A group of 15 persons is being used to pilot the project. The data's mean value and standard deviation were computed. The values prior and following posterior tibial nerve stimulation were compared using the Wilcoxon signed rank test. The Wexner score had been used to compare incontinence frequency. Significant was considered as a p value of less than 0.001.

According to the statistical analysis done on the quantitative data, the data obtained are statistically significant between pre-test and post-test, with a mean value of 3.0 in pre-test and 1.0 in post-test and a standard deviation of 3.0 in pre-test and 1.0 in post-test. As a result, it was discovered that posterior tibial nerve stimulation is beneficial in minimizing the effects of fecal incontinence in the geriatric.

Table 1. Shows pre-test and post-test values of the Wexner score for improvement of fecal incontinence in geriatric patients

Test	Mean	Sd	W value	Z value	P value
Pre-test	3.0	3.0	-120.000	-3.626	<0.001
Post-test	1.0	1.0			

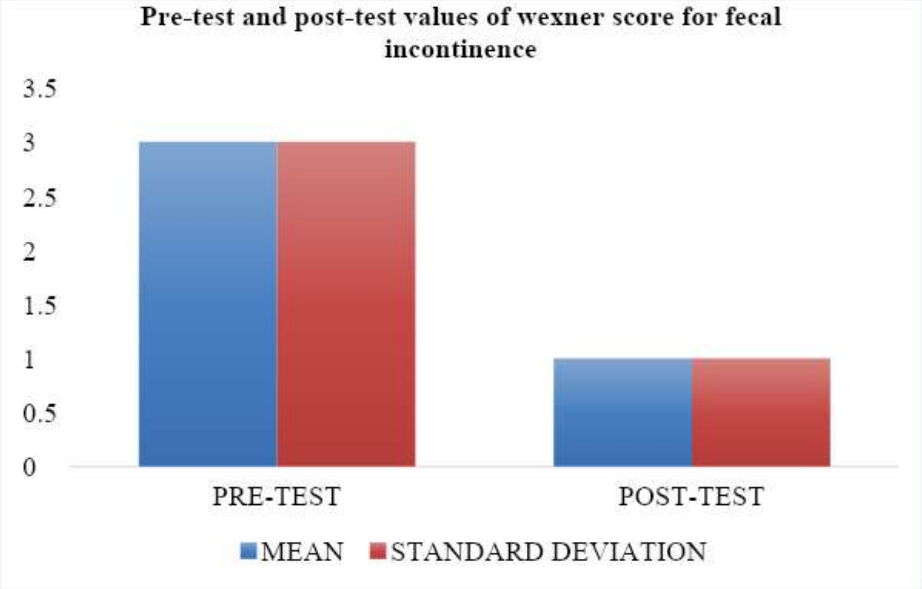

Figure.1. Shows the pre-test and post-test values of the Wexner score for fecal incontinence in geriatric patients.

Discussion

As Fecal incontinence that is resistive to medicine, there are few therapy alternatives. Dietary changes, use of thickening or anti-diarrhea medicines, plus neurofeedback treatment are among medical possibilities. Both injectable medicines and passive barriers were used. Surgical methods include postanal correction (postanallevatorplasty) including both direct and overlapping anterior urethral repair. Frontal urethral repair can be done in two ways: straight and overlapping. However, the outcomes of such procedures seem to be at better unsatisfactory, with treatment outcomes of thirty-five to fifty percent fewer over time (Halverson et al., 2002; Malouf et al., 2000). The focus of this research was to see how posterior tibial nerve stimulation influences the outcome on fecal incontinence among geriatrics. In this study, 15 participants, 9 women and 6 men aged 60 years and older, were chosen and they were given 20 minutes of posterior tibial nerve stimulation twice a day for four weeks, with a pulse width of 200 μs and a frequency of 10 Hz. The significance of the results was determined using the Wilcoxon signed rank test in enhancing fecal continence, which demonstrated a significance of W = -120.000 and Z = -3.626, revealing a P value of <0.001 (TABLE 1). Tibial nerve stimulation, according to Finazzi-Agro E (2010), According to the previously described definition, 12 (71%) of the 17 patients 0 of the fifteen patients in the placebo group and 0 of the patients diagnosed in the PTNS group were declared responders (p0.001). PTNS can be deemed a successful intervention for detrusor overactivity incontinent episodes, according to the author, with 71 percent of patients responding, compared to none of those treated with placebo. In this patient population, the placebo effect appears to be insignificant (Finazzi-Agro et al., 2011; Vandoninck V et al., 2003), Subjective success was noted by 22 patients (63 percent). The total number of leakage episodes was reduced by 50% or more in 24 of the patients (70 percent). After 12 sessions, 16 (46%) of these individuals were completely recovered (i.e., no leaking incidents). The indices of quality of life have greatly improved.

Posterior tibial nerve stimulation showed significant effects in patients with urge incontinence complaints, as subjective and objective metrics improved (Findlay et al., 2011).

Thirteen individuals (54%) reported clinically meaningful improvement as well as a dramatic shift in the Wexner's score after 90 days (fourteen vs twelve, p 0.025).

Conclusion

The use of posterior tibial nerve stimulation in the elderly has been proven to be a successful therapy technique for reducing fecal incontinence episodes. In terms of treatment, the findings of this study seem promising. It is concluded that posterior tibial nerve stimulation seems to be an acceptable, less invasive therapy option for patients with urge incontinence complaints, as subjective and objective metrics improved (Findlay et al., 2011). Thirteen individuals (54%) reported clinically meaningful improvement as well as a dramatic shift in the Wexner's score after 90 days (fourteen vs twelve, p 0.025). While there were 11 patients whose condition had improved after a median follow-up of 15 months (Veronique et al., 2010).

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