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Parsemus Foundation

Noninvasive treatment for men suffering from enlarged prostate

Pulsed electromagnetic field therapy decreased prostate volume and improved the symptoms of benign prostatic hyperplasia, cites research published in Andrology.

Physicians from Sapienza University in Rome have published promising results of a small prospective interventional trial using noninvasive pulsed electromagnetic field therapy (PEMF) to treat men suffering from benign prostatic hyperplasia (BPH). After one month of treatment, prostate volume and symptoms significantly decreased. Men with moderate-severe lower urinary tract symptoms and without metabolic syndrome benefitted more from the treatment. The study was recently published in *Andrology,* the highest ranked journal of andrological research.

Benign prostatic hyperplasia is a common affliction of older men
Most men over the age of 50 will develop enlarged prostate, or BPH. The walnut-sized prostate gland produces prostatic fluid, which is a main component of semen. It can grow to the size of a lemon by the time a man is 60 years of age and may press against the bladder and urethra. BPH includes chronic lower urinary tract symptoms, such as frequent and urgent urination, sense of incomplete bladder emptying, and decreased force of the urine stream. A common complaint is having to get up at night to urinate. Approximately 60% of men over the age of 60, and 80% of men over the age of 80, will experience the symptoms of BPH.

A poorly understood disease
Risk factors for BPH include age, diabetes, cardiovascular disease, hypertension, and metabolic syndrome. The etiology of the disease is not completely known, but inflammatory damage is the most likely cause. Inflammation triggers fibrosis and lack of oxygen to affected tissue, resulting in structural changes in the prostate. This creates a cycle of inflammation-fibrosis-hypoxia-inflammation, which in turn causes glandular remodeling and tissue growth (Berger, et al., 2003; Mishra, et al., 2007).

Traditional treatment options for BPH include medications such as alpha-blockers and 5α-reductase inhibitors or surgical interventions. Side effects of treatments may include the inability to ejaculate, retrograde ejaculation (semen flows backwards into the bladder), erectile dysfunction, and even loss of bladder control. Some men affected have reported that

taking saw palmetto, an herbal supplement, gives them relief but clinical evidence for its effectiveness is not conclusive. Clearly, effective and less invasive treatments for this common disease are needed.

Pulsed Electromagnetic Field Therapy and BPH

PEMF consists of low frequency pulsed energy waves and has been used for a variety of ailments such as various orthopedic conditions. For example, PEMF has been shown to reduce pain and improve function for those afflicted with osteoarthritis. The electromagnetic field is produced by a device that reduces inflammation by promoting growth of new blood vessels, dilation of blood vessels, and tissue remodeling. The overall effect is reduction in tissue hypoxia. These aspects of PEMF make it an ideal noninvasive option to treat BPH (Frey, 1974; Hug and Roosli, 2012).

In this regard, only a few studies have used PEMF to treat enlarged prostate. Two published studies used a desktop PEMF device to treat BPH in men with positive, but variable, results (Elgohary and Tantawy, 2017; Giannakopoulos, et al., 2011). A more recent study in 20 dogs, which also suffer from enlarged prostate as they age, found an average of 57% reduction in prostatic volume following three weeks of treatment with a portable PEMF device, without any interference in semen quality, testosterone levels, or libido (Leoci, et al., 2014).

The current study used a similar PEMF device and treatment program as the dog study. Twenty-seven naïve patients with BPH and lower urinary tract symptoms were enrolled. They received a battery of tests including transrectal ultrasound and standardized questionnaires at baseline. They then used a handheld PEMF device (Magcell® Microcirc, Physiomed Elektromedizin) for five minutes twice daily for 28 consecutive days. The tests were then repeated. Nine patients elected to continue therapy for three more months while others discontinued. A final health evaluation was completed at four months for all patients.

“The patients were happy with this simple treatment plan, and we were very pleased that their symptoms significantly improved after only one month of treatment, without any sort of side effects,” noted corresponding author Prof. Andrea Isidori.

PEMF was able to significantly reduce prostate volume after just 28 days of therapy, resulting in a median decrease of 5.4%. Symptoms also improved, with high compliance and no effects on hormonal and sexual function. There were no differences between subjects who continued therapy for three more months and those who did not, showing that one month of therapy may be sufficient for the device to effectively reduce prostate volume and symptoms. Patients with moderate-severe lower urinary tract symptoms and without metabolic syndrome (a cluster of conditions that include increased blood pressure, high blood sugar, excess body fat around the waist, and abnormal cholesterol or triglyceride levels and that increase the risk of heart disease, stroke, and type 2 diabetes) seemed to benefit more from this treatment.

Next steps

The pilot study provided promising evidence for the usefulness of PEMF to treat BPH. The decrease in prostate size was less than that attained in dogs, however. This may be due to

differences between dogs and humans in the architecture of prostate tissue and growth characteristics due to BPH. Additional research with a larger number of men and a control group is needed to better understand the optimal schedule and duration of treatment, the impact of treatment on prostate tissue, and the potential use of PEMF in conjunction with traditional BPH therapies.

"The Parsemus Foundation supported this pilot study in men following the successful trial in dogs, with the goal of finding an inexpensive, noninvasive method to alleviate the symptoms of enlarged prostate," said Executive Director Linda Brent, PhD. "We look forward to partnering with other funders to sponsor additional research on the use of PEMF to treat BPH."

Article link: The article is available online from *Andrology* at: https://onlinelibrary.wiley.com/doi/full/10.1111/andr.12775

About Sapienza University (Rome): Sapienza University is the first university in Europe, with over 700 years of history, over 113,000 students, 3,300 teachers, and 2,000 employees. Nobel Prize winners and internationally renowned scientists have taught and/or studied at Sapienza. Scientific research activity at Sapienza covers an extremely broad spectrum of disciplines, reaching levels of excellence in many areas, including medicine. Among university hospitals, "Policlinico Umberto I," the main public hospital in Rome, is at the forefront of many fields of medical research. The Department of Experimental Medicine, directed by Prof. Andrea Lenzi, is accredited by the European Academy of Andrology and tops the world ranking for andrological research.

About the Parsemus Foundation (San Francisco): The Parsemus Foundation works to create meaningful improvements in human and animal health and welfare by advancing innovative and neglected medical research. The foundation's focus is on supporting small proof-of-concept studies and then pursuing press coverage of the results, so that the advances change treatment practice rather than disappearing into the scientific literature. Many of the studies we support involve low-cost approaches that are not under patent. Focus areas include male contraception, nonsurgical dog and cat sterilization, non-invasive treatment of benign prostatic hyperplasia, and breast cancer treatment. More information on the Parsemus Foundation and the work presented here can be found at: www.parsemus.org

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