Medical Xpress

Simple nerve stimulation may improve sexual response in women

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Electrodes aren't the first thing most people think of when it comes to achieving sexual arousal. But if the results of a pilot study are any indication, that may soon change.

Female sexual dysfunction (FSD), a condition that ranges from a lack of libido to an inability to achieve orgasm, affects 40 to 45 percent of women, especially as they age.

FSD can be tough to diagnose and even more difficult to treat.

And while clinicians have attempted to help women by prescribing sildenafil (better known by its brand name, Viagra), hormones, and flibanserin these methods don't always work and can have undesirable side effects.

That's why two University of Michigan researchers were intrigued after learning that neuromodulation treatments for bladder dysfunction occasionally led to improvements in sexual function.

"In this particular treatment, a patient receives nerve stimulation therapy once a week to improve neural signaling and function in the muscles that control the bladder," says Tim Bruns, Ph.D., an assistant professor of biomedical engineering at U-M. "The nerves controlling the pelvic organs start out in the same location in the spinal cord and branch out."

Interestingly, Bruns notes, one form of stimulation is effective for bladder dysfunction despite an odd placement of the electrodes: near the tibial nerve in the ankle.

The current theory, Bruns explains, is that the nerves that travel down to the foot overlap near the spinal cord with some of the nerves to the pelvic organs, leading to a possible overlap in synaptic routes.

Sensing an opportunity, Bruns and his colleague, Nicholas Langhals, Ph.D., looked into whether the technique had been investigated in women without bladder problems.

Surprisingly, there was almost no research.

Testing a theory

Bruns decided to study the technique in rats and humans.

In the rat studies published last year and earlier this year, Bruns' team stimulated nerves in the genital and ankle region. After 15 to 30 minutes, the rodents experienced a strong increase in vaginal blood flow.

Then, working with Michigan Medicine obstetrician-gynecologist Mitchell Berger, M.D., Ph.D., and urologic surgeon Priyanka Gupta, M.D., the researchers recruited nine women with FSD (and without bladder problems) for a pilot study.

Each woman received 12 half-hour sessions of transcutaneous electrical nerve stimulation in which participants had electrodes placed either in the genital region or on the ankle.

A 53-year-old woman who got involved with the study after reporting difficulty achieving orgasm to her gynecologist, described the experience as "a bizarre, pressure vibration sensation."

Still, she managed. "After a few minutes, however, you get used to it," the participant recalled. "Then, you sit there for 30 minutes. I brought a book to read during my session."

Electrodes boost sexual function

Results of the sessions showed substantial promise: Eight of out the nine women reported some improvement in arousal, lubrication and orgasm.

"Across a variety of clinical studies, if you get a 50 percent improvement in symptoms, you can consider that a successful response," Bruns says. "We had four participants meet or exceed that threshold."

Overall improvement in score was comparable or greater than prior studies of different types of drugs or neuromodulation for FSD, he adds. However, future studies with blinding and a placebo control are needed to rule out any placebo effect.

This study, published in the journal *Neuromodulation*, was funded in part by a grant from the Michigan Institute for Clinical and Health Research, which is funded by the National Institutes of Health.

More research planned

Bolstered by these early findings, the Michigan team is currently seeking funding to carry out a larger study.

Says Gupta: "This study presents an alternative method for treating female sexual dysfunction that is non-pharmacologic and non-invasive. Through studies like this we can further understand female sexual arousal and offer treatments for a disorder that has very few options."

The treatment definitely has at least one fan: the participant interviewed about her experience.

"It worked for me," she says. "I'm not one-hundred percent back to the way I was, but I can have orgasms again and they are pretty good ones."

More information: Lauren L. Zimmerman et al, Transcutaneous Electrical Nerve Stimulation to Improve Female Sexual Dysfunction Symptoms: A Pilot Study, *Neuromodulation: Technology at the Neural Interface* (2018). DOI: 10.1111/ner.12846

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