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SEXUAL DYSFUNCTION IN MULTIPLE SCLEROSIS

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Multiple Sclerosis is a chronic disease that often affects young adults who are sexually active. These patients have a markedly lower "health-related" quality of life despite the extent of their physical disabilities, which emphasizes the need to identify the problems contributing to this problem (Bakke et al 1996). One study reported that 27% of female and 73% of male MS patients were willing to tackle the problem of sexual dysfunction while other studies consistently show >70% of patients admitting to issues with sexuality (Zorzon, Zivadinov et al 2001). In a small minority of patients, sexual dysfunction was the initial presenting symptom of MS (Zorzon, Zivadinov et al. 1999).

Despite the relatively straight forward sound of sexual dysfunction, the problem can be quite complex. In men, the most common problems are erectile dysfunction (63%), ejaculatory/orgasmic dysfunction (50%), and decreased libido (40%). In women, the disability tends to be decreased vaginal lubrication (37%), difficulty achieving orgasm (37%), and impaired genital sensitivity/decreased sexual desire (31%) (Zorzon, Zivadinov et al. 1995). These problems are not only related to lesions affecting the neural pathways, but may also be related to physical disabilities. The psychological aspects of sexual dysfunction are generally related to the emotional issues of not being able to perform adequately or fear of not being able to satisfy the partner (Kessler et al 2009).

NORMAL MECHANISMS OF SEXUAL FUNCTION

In men, sexual function relates to erection and ejaculation. Erection of the penis, controlled by the autonomic nervous system, is the result of relaxation of the smooth muscle cells in the arteries and arterioles of the paired corpora cavernosa combined with the venocclusion resulting from compression of the subtunical venular plexus against the tunica albuginea. Parasympathetic innervation, which controls erection, originates in S2-S4. The preganglionic nerves passage in the pelvic nerves to the pelvic plexus, where they join the sympathetic innervation coming from the hypogastric plexus. Parasympathetic stimulation generates release of acetylcholine and nitric oxide. Nitric oxide mediates through a second messenger system involving cyclic guanosine monophosphate (cGMP). Detumescence results from the breakdown of cGMP by phosphodiesterase type 5 (PDE5). The sympathetic pathway, which controls detumescence, originates in the intermediolateral cell column in the T10-L2 segments. Sympathetic

control is mediated via the neurotransmitter norepinephrine. Information is conveyed via the pudendal nerve, entering the cord at S2-S4, terminating in the central gray area. Innervation of the bulbocavernosus and ischiocavernosus muscles also originates in S2-S4 and is essential for ejaculation.

Female sexual dysfunction involves vaginal lubrication, orgasm and desire. The uterus is innervated by uterine nerves from the inferior hypogastric plexus, formed by sympathetic fibers from T10-L1 and parasympathetic fibers from S2-S4. Sensorimotor innervation is from the pudendal nerve (S2-S4). Sexual arousal responses are controlled by the spinal reflex arcs, including an autonomic arc for clitoral, vaginal and labial engorgement and the bulbocavernosus reflex arc (S2-S4) controlling pelvic floor muscle contractions. PDE5 pathways result in peripheral arousal of the clitoral corpora cavernosa, corpus spongiosum, vaginal epithelium and vaginal lamina propria. There have only been limited studies investigating the physiology of sexual dysfunction in women but these support the role of nitric oxide and cGMP, as in men.

EVALUATION

Causes of erectile dysfunction (ED) can be divided into five distinct groups. These are psychogenic, neurogenic, endocrine, vascular and drug related. A comprehensive history and physical evaluation must focus on these five elements, as not all ED in men with MS is necessarily of neurogenic origin. In addition to a complete medical history, a thorough sexual history is invaluable in evaluating men with sexual dysfunction. This focuses on making the distinction between erectile dysfunction, ejaculatory disorders and loss of libido. Usually, the most common presenting complaint is reduced rigidity of erections; less commonly, the patient may note total absence of erection. Ejaculatory problems may be classified as premature, delayed or dry. While libido is usually preserved in men presenting specifically with erectile dysfunction, it may be more of a problem in the MS patient. A decline in sexual drive may suggest an endocrinological abnormality. A thorough physical examination and a focused neurological examination are crucial. Examination of the external genitalia includes the testicles, prostate and penis, including the appearance of the meatus, foreskin and penile shaft. (Carson et al 1999).

In women, sexual dysfunction is a multicausal problem of psychological, physiologic and interpersonal factors. It progresses with age and affects between 20 and 50% of women (Basson et al 2000). As there are only limited management strategies for women with sexual dysfunction, the diagnosis and treatment is best undertaken by a committed health care professional doing a detailed history and careful physical evaluation. The history should include sexual, medical and psychosocial health, so that the many factors that contribute to sexual dysfunction can be characterized. Neurologic testing of the integrity of the motor and sensory innervation of a woman's external genitalia is indicated assessing the pathophysiology of the sexual dysfunction.

MANAGEMENT

An open dialogue between the MS patient and healthcare provider about sexual dysfunction is an important first step in treatment. In one study 63% of MS patients with sexual dysfunction never even talked to their doctors about this problem (Alarcia-Alejos et al 2007). In recognizing that sexual problems are part of MS, this can improve overall quality of life for these complicated patients. Interventions may include symptomatic treatment with hormone therapy and medications, but also couple counseling to enhance communication with partners.

In men, part of the work-up should include evaluation of specific hormone levels. If low testosterone and free testosterone levels are detected, then testosterone treatment should be considered. In some studies, there is concern about giving testosterone in the face of prostate cancer so PSA testing and prostate cancer screening are essential. If there is no risk for prostate cancer, then testosterone therapy can be considered.

Specific pharmacotherapy is only available for erectile dysfunction. The options include oral medications, penile corporal cavernosal injection therapy, vacuum device or surgical placement of a penile prosthesis. The oral medications are the PDE5 inhibitors. For men taking any form of nitrates, the PDE5 inhibitors are strictly contraindicated secondary to the risk of significant hypotensive events.

In women, treatment for sexual dysfunction usually involves hormonal therapy. Estrogen replacement, topical or oral, can effectively restore vaginal dryness, atrophy, genital tissue structure and function. In addition, estrogens contribute to sexual and nonsexual functions, such as desire, orgasm and feelings of well being (Nappi et al 2005). DHEA (dehydroepiandrosterone) treatment can increase serum testosterone levels in women, but is not routinely used at this time as there is a lack of pharmaceutical grade DHEA preparations that have consistent DHEA levels and/or are free from contaminants (Baulieu et al). Testosterone therapy has been used in some women with success. One group of examiners observed improved pleasure and orgasm in women who utilized the testosterone patch. Another study found that testosterone treatment was associated with improvement in arousal, orgasm and body image (Simon et al 2004).

One study did assess the tolerability, efficacy and safety of Viagra for women with sexual dysfunction and MS. While there was a statistically significant improvement in vaginal lubrication after treatment with

Viagra, there was no overall change in quality of life. Therefore Viagra can not be considered to help all female patients with neurogenic sexual dysfunction.

CONCLUSION

Sexual problems are common among MS patients, even if they have had MS for only a short time. While bowel and bladder problems are often addressed by the primary care doctor or neurologist, sexual dysfunction is often neglected by health care professionals. This may be due to the fact that the patient is reluctant to bring up the problem or the caregiver is uncomfortable discussing sexual health. Since options for sexual dysfunction are limited, especially in a population of patients who may have significant neurologic limitations, it is often difficult to have a discussion about this topic. However, given that the symptoms of sexual dysfunction may progress as the disease progresses, it is important to focus on these aspects in the all stages of MS.

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