Disorders of the Urogenital Organs

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Abstract: Estrogen receptors are densely distributed in the trigone of the urinary bladder, the urethra, and the vagina, all of which are structures that develop from the urogenital sinus. Consequently, chronic postmenopausal estrogen deficiency affects the urogenital tissues and causes atrophy that leads to dysfunction of the urogenital organs. In this article, the clinical effects of hormone replacement therapy (HRT) on menopausal or geriatric urogenital dysfunction are described along with the relevant pathophysiological background.

Key words: Estrogens; Urinary tract infection; Urinary incontinence; Coital disorders

Introduction

Chronic estrogen deficiency occurs after the menopause and this affects the urogenital tissues, causing atrophy, because estrogen receptors are densely distributed in the trigone of the urinary bladder, the urethra, and the vagina, all of which develop from the urogenital sinus. Consequently, postmenopausal estrogen deficiency is a cause of various types of urogenital dysfunction.

In this article, the clinical effects of hormone replacement therapy (HRT) on urogenital dysfunction during the menopausal or geriatric periods of female life are described together with the pathophysiological background.

Clinical Effect of HRT on Urinary Tract Dysfunction

1. Urinary frequency, nocturia, urgency, and urinary tract infection

   After the menopause, chronic estrogen deficiency leads to urethral atrophy, and even in the absence of urinary tract infection, frequency, nocturia, urethral burning, and urgency can occur along with dysuria. As the urethral mucosa becomes thinner, the sensory nerves come closer to the mucosal surface. Consequently, the passage of urine stimulates these nerves through the thin mucosal epithelium and produces a burning sensation. Postmenopausal urination problems are characterized by difficulty in initiating micturition, partly because of atrophy of the distal urethra. In addition,
1. Diseases of the vagina and external genitalia

The vaginal bacterial flora are altered secondary to an increase of pH due to the disappearance of lactobacilli, inducing the migration of enterobacteriaceae (particularly E. coli) into the vagina. The subsequent proliferation of these organisms, as well as urethral atrophy, contribute to the occurrence of postmenopausal urinary tract infection.1)

Urinary tract infection is recurrent in 8% to 10% of the female population over the age of 60 years.3) Antibiotic therapy for 3 days followed by application of a vaginal cream containing estriol (E₃) can improve the vaginal pH, and is markedly effective against such recurrent urinary tract infection (Table 1).3) Like vaginal cream, oral E₃ is also effective. Estrogens are effective because they restore vaginal autpurification, and prevent the entry of enterobacteriaceae into the introitus and their subsequent proliferation, through 1) revitalization of the atrophic vaginal and urethral mucosae, and 2) acidification of the intravaginal pH secondary to increased proliferation of lactobacilli.

2. Urinary incontinence

Urinary incontinence does not suddenly increase after the menopause, but it increases with age until the sixth decade of life.4) Furthermore, it is significantly more common in multiparous women than in nulliparous women. Estrogen replacement therapy (ERT) is effective for urge incontinence, but estrogen therapy alone is ineffective against urinary incontinence due to increased abdominal pressure (stress incontinence).5) A combination of estrogen and an α-adrenergic receptor stimulant is more effective than either agent alone.

The major causes of stress incontinence due to increased abdominal pressure include laxity of the muscles and tissues forming the pelvic floor, and weakening of the supporting tissues of the bladder. In addition to the drugs described above, training to strengthen the muscles of the pelvic floor is an essential part of conservative therapy for stress incontinence.

Clinical Effects of HRT on Symptoms of the Reproductive Organs

1. Diseases of the vagina and external genitalia

Local or systemic administration of estrogens is markedly effective for atrophic vaginitis (senile vaginitis). Unlike vaginitis, vulvar dystrophies which are caused by the loss of subcutaneous fat and elasticity resulted from menopause are poorly responsive to ERT, because vulva is not a Müllerian derivative.6)

2. Sexual dysfunction

Postmenopausal atrophy of the vagina and surrounding tissues due to estrogen deficiency prevents vaginal dilation in response to sexual
stimulation and reduces lubrication. This causes pain during intercourse (dyspareunia). Post-menopausal vaginal atrophy is less severe in women who are sexually active (intercourse 3 times or more per month) around the menopause than in women who are sexually inactive (less than 10 times per year). In addition, sexually active women find intercourse less uncomfortable than sexually inactive women.71 Semmens et al. assessed physiological changes such as the intravaginal pH and vaginal blood flow in postmenopausal women receiving HRT for 24 months.80 This study showed that HRT significantly improved both the intravaginal pH and vaginal blood flow after one month. In particular, vaginal blood flow continued to increase throughout treatment for 24 months. HRT does not directly stimulate sexual desire, but can indirectly benefit sexual function and hence improve the quality of life (QOL).

Conclusions

Postmenopausal dysfunction of the urogenital organs secondary to chronic estrogen deficiency is unavoidable for all women, although the severity varies among individuals. Such dysfunction can markedly worsen the QOL of postmenopausal women. By using HRT, or oral or transvaginal E3 preparations that rarely cause side effects, many of the symptoms of dysfunction can be considerably alleviated. Accordingly, these therapies are considered useful for improving QOL in postmenopausal women.

REFERENCES