

Genitourinary syndrome of menopause and urinary symptoms: A review of pathophysiology and role of estrogen in urinary incontinence

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Aim

- Review the current understanding of the pathophysiology of urinary incontinence (UI) in postmenopausal women
- Assess efficacy of estrogen therapy as the recommended treatment, and administration route

Study design

Two sources of literature search:

1. Series of selected studies on the pathophysiology of urinary incontinence associated with genitourinary syndrome of menopause (GSM) to demonstrate underlying physiological mechanisms that occur during menopause.
2. Literature review on efficacy of estrogen therapy in urinary incontinence on PubMed and Scopus databases until Jan 2024 using keywords “urinary incontinence, genitourinary syndrome of menopause, physiology, and estrogen”. Two authors reviewed each article independently and double-screened for eligibility. The third author was involved in reviewing any discrepancies.

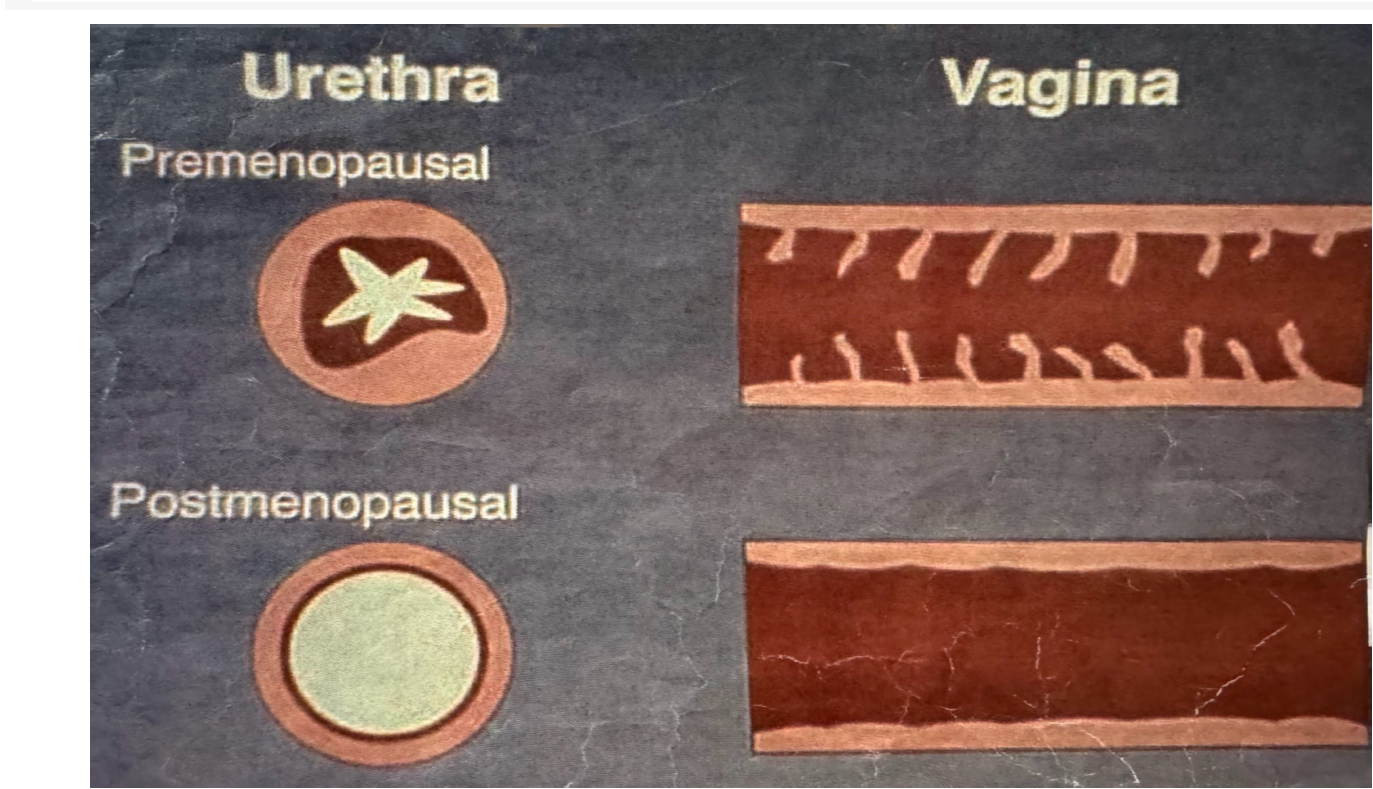
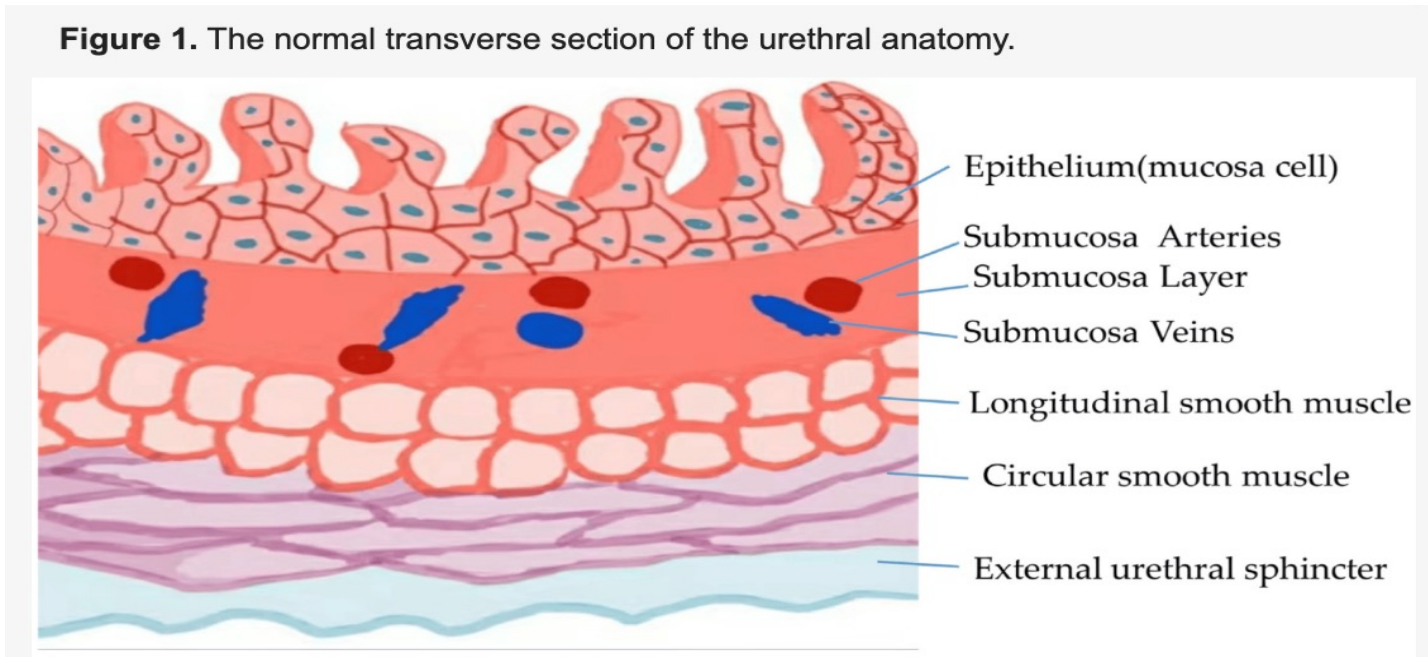
Findings

The physiological changes that occur in the lower urinary tract with age:

- Pelvic floor strength decreases with an increase in levator hiatus in menopausal women
- Decrease in urethral closing pressure contributed by the loss of the submucosal plexus, driven by estrogen-deficiency

Eligible studies reviewed menopausal women with urinary incontinence being treated with different variation of estrogen administration.

The trials used varying combinations of estrogen types, routes, dosage and duration of treatment. The effect of systemic estrogen administration on urinary incontinence is conflicting based on the type of urinary incontinence described.



Discussion

- Pelvic floor muscles support the urethral in stabilising it in its correct anatomical position.
- The levator ani muscles and pubocervical fascia provide a base structure in supporting the urethra during episodes of raised abdominal pressure. Therefore weakness in these structures with age leads to the loss of supporting mechanism to maintain urethral continence function.
- The urethral submucosal layer contains a rich vascular plexus that partly supplies adequate occlusive pressure.
- This pressure is also augmented by urethral smooth muscle and striated sphincter muscles which contributes to its ability to coapt and prevent urinary leakage.
- The submucosal venous plexus is described histologically as hormone-sensitive and has been demonstrated to reduce in volume and elasticity with menopause.
- The current thinking is that estrogen use is beneficial in addressing these physiological changes, but our literature review has shown conflicting evidence on the efficacy of estrogen use.
- Due to the limited number of robust trials comparing both oral and vaginal estrogen administration and usage length in menopausal women, it is difficult to determine a direct association on the benefit of estrogen in managing UI.
- There is conflicting data on efficacy of route of estrogen on incontinence, especially systemic estrogen is associated with worsening urinary incontinence in some studies.
- Vaginal estrogen has strong association with improving UI.

Conclusion

- There is strong association between increasing lower urinary tract dysfunction in postmenopausal women, particularly urinary urgency and urge incontinence.
- There is strong evidence demonstrating that vaginal estrogen use improves urinary urge incontinence, but further research needs to be conducted into this

References

