

Urodynamic Evaluation of Female Patients Presenting with Lower Urinary Tract Symptoms: Considering Age-Related Bladder Dynamic ChangesAnupama Bais Solanki¹, Fanindra Singh Solanki², Anurag Dubey³¹MS Obs and Gynae, fellowship in urogynaecology, Consultant, Asha Kiran Urology and Urogynaecology Center Jabalpur (M.P.) India²Professor & Head of the Department of Urology, N.S.C.B. Medical College and Hospital, Jabalpur (M.P.) India³Associate professor, Department of Urology, N.S.C.B. Medical College and Hospital, Jabalpur (M.P.) India

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Abstract:

Lower urinary tract symptoms (LUTS) are a common complaint among women, and their prevalence increases with age. This study aimed to evaluate the urodynamic parameters of 150 female patients presenting with LUTS, considering age-related bladder dynamic changes. Our results show that the urodynamic parameters varied significantly across different age groups, with older women exhibiting decreased bladder capacity, increased detrusor pressure, and reduced flow rates. These findings highlight the importance of considering age-related bladder dynamic changes in the diagnosis and management of LUTS in women.

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Introduction

Lower urinary tract symptoms (LUTS) are a common complaint among women, affecting up to 50% of the female population. The prevalence of LUTS increases with age, with older women being more likely to experience symptoms such as urinary incontinence, urgency, and frequency. Urodynamic evaluation is a valuable diagnostic tool for assessing bladder function in women with LUTS. However, age-related bladder dynamic changes can affect the interpretation of urodynamic parameters, making it essential to consider these changes when evaluating women with LUTS.

Methods

This study included 150 female patients presenting with LUTS, aged between 20 and 80 years. The patients were divided into five age groups: 20-29 years (n = 30), 30-39 years (n = 30), 40-49 years (n = 30), 50-59 years (n = 30), and 60-80 years (n = 30). All patients underwent a comprehensive urodynamic evaluation, including uroflowmetry,

filling cystometry, and pressure-flow studies. The urodynamic parameters evaluated included bladder capacity, detrusor pressure, flow rate, and post-void residual volume.

Results

The urodynamic parameters varied significantly across different age groups. The mean bladder capacity decreased with age, from 421.2 ± 101.5 mL in the 20-29 years age group to 251.1 ± 75.6 mL in the 60-80 years age group (p < 0.001). The mean detrusor pressure increased with age, from 15.6 ± 5.5 cmH₂O in the 20-29 years age group to 25.9 ± 8.2 cmH₂O in the 60-80 years age group (p < 0.001). The mean flow rate decreased with age, from 18.5 ± 6.2 mL/s in the 20-29 years age group to 10.3 ± 4.5 mL/s in the 60-80 years age group (p < 0.001). The post-void residual volume increased with age, from 15.1 ± 10.2 mL in the 20-29 years age group to 50.6 ± 25.1 mL in the 60-80 years age group (p < 0.001).

Table 1: Demographic characteristics of the patients

Age Group	Number of Patients	Mean Age (years)	Mean BMI (kg/m ²)
20-29	30	24.5 ± 2.5	22.1 ± 3.5
40-49	30	44.1 ± 3.1	26.3 ± 4.9
30-39	30	34.2 ± 2.8	24.5 ± 4.2
50-59	30	54.2 ± 3.5	28.1 ± 5.1
60-80	30	65.6 ± 4.2	29.5 ± 5.5

Table 2: Urodynamic parameters by age group

Age Group	Bladder Capacity (mL)	Detrusor Pressure (cmH ₂ O)	Flow Rate (mL/s)	Post-Void Residual Volume (mL)
20-29	421.2 ± 101.5	15.6 ± 5.5	218.5 ± 6.2	15.1 ± 10.2
30-39	381.1 ± 92.1	18.2 ± 6.2	16.2 ± 5.5	20.5 ± 12.
40-49	321.9 ± 81.9	21.1 ± 7.1	13.9 ± 4.9	30.2 ± 15.6
50-59	261.1 ± 71.9	24.5 ± 8.2	11.5 ± 4.2	40.9 ± 20.5
60-80	251.1 ± 75.6	25.9 ± 8.5	10.3 ± 4.1	50.6 ± 25.1

Table 3: Comparison of urodynamic parameters between age groups

Parameter	20-29 vs 30-39	30-39 vs 40-49	40-49 vs 50-59	50-59 vs 60-80
Bladder Capacity	p < 0.01	p < 0.01	p < 0.01	p < 0.05
Detrusor Pressure	p < 0.05	p < 0.01	p < 0.01	p < 0.05
Flow Rate	p < 0.05	p < 0.01	p < 0.01	p < 0.05
Post-Void Residual Volume	p < 0.05	p < 0.01	p < 0.01	p < 0.05

Table 4: Correlation between urodynamic parameters and age

Parameter	Correlation Coefficient (r)	p-value
Bladder Capacity	-0.65	p < 0.001
Detrusor Pressure	0.71	p < 0.001
Flow Rate	-0.58	Flow Rate -0.58 p < 0.001
Post-Void Residual Volume	0.62	p < 0.001

Discussion

Our results show that the urodynamic parameters of female patients with LUTS vary significantly across different age groups. The decrease in bladder capacity and increase in detrusor pressure with age are consistent with previous studies, which have shown that older women are more likely to experience detrusor over activity and reduced bladder compliance. The decrease in flow rate and increase in post-void residual volume with age are also consistent with previous studies, which have shown that older women are more likely to experience voiding difficulties and urinary retention.

Conclusion

In conclusion, our study highlights the importance of considering age-related bladder dynamic changes in the diagnosis and management of LUTS in women. The urodynamic parameters of female patients with LUTS vary significantly across different age groups, and these changes should be

taken into account when interpreting urodynamic results. Further studies are needed to explore the relationship between age-related bladder dynamic changes and LUTS in women, and to develop effective treatment strategies for managing LUTS in older women.

References

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