

Feasibility of continuous monitoring of the bladder volume by a new portable ultrasound bladder scanner, Lilium α-200

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Introduction

- Lilium α-200, a new portable ultrasound (US) bladder scanner, is capable of measuring bladder volume continuously through a small probe attached on the suprapubic region.
- No previous study has evaluated the accuracy of the data of its continuous measurements.
- We evaluated the correlation of the bladder volume periodically measured by Lilium α-200 with the instilled volume during video-urodynamic studies (V-UDS).

Materials and methods

- Bladder volume of adult patients was periodically measured by Lilium α-200 during V-UDS.
- A small US probe was placed on the suprapubic region to measure bladder volume every one minute.
- After the initial US measurement, post-void residual (PVR) urine was drained by a catheter.
- Filling cystometry (20 ml/min) in supine position was performed with US measurements.

Results

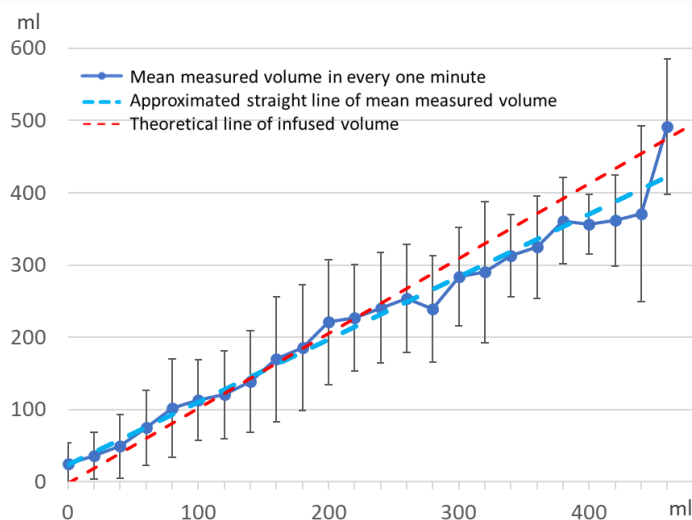
15 patients (14 men, 1 woman), median age 70 (18-84) were included.

Strong correlation between PVR volumes measured by drainage and by US (N = 15) (R = 0.95, p < 0.0001, Figure 1)

No significant difference between mean PVR volume measured by drainage and by US (131.5 ± 108.3 vs. 135.2 ± 119.7 ml, p = 0.74)

Figure 2.

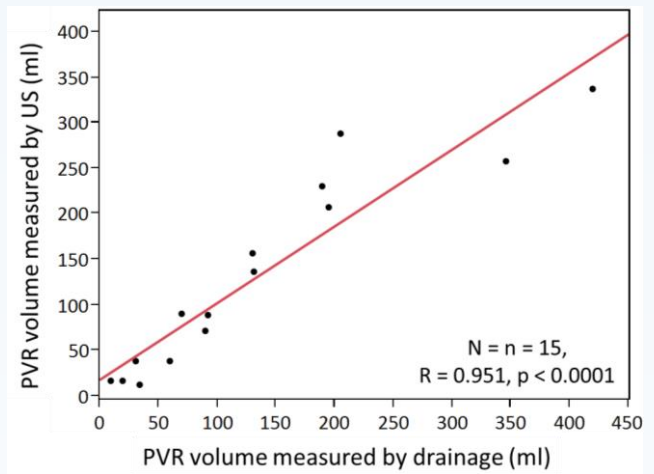
A.



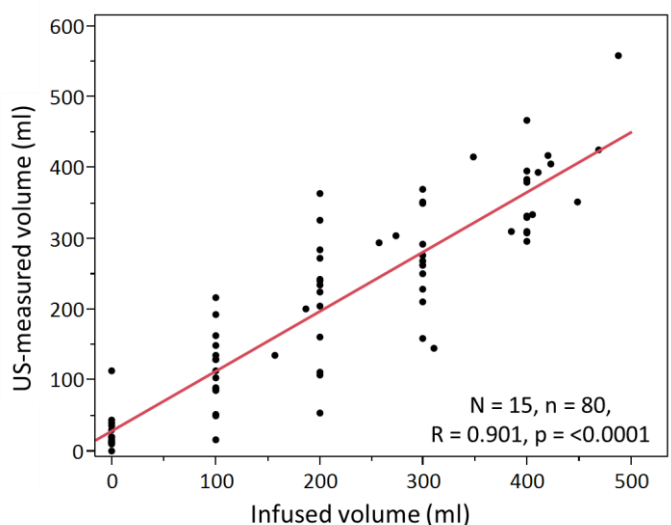
A. Blue points and solid line: Mean bladder volume measured by US in each minute
Light blue broken line: approximation straight line of measured bladder volume by US
Red broken line: theoretical value of infused volume

B. Correlation between infused volume and bladder volumes measured by US at every 100 ml and at the stop of infusion during filling cystometry (N = 15, n = 80, R = 0.90).

Figure 1.



B.



Conclusion

Continuous measurement of bladder volume by Lilium α-200 is feasible within normal range of bladder capacity.

