342- Analyzing uroflowmetry outcomes for patient after radiation therapy for prostate cancer

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Hypothesis / aims of study

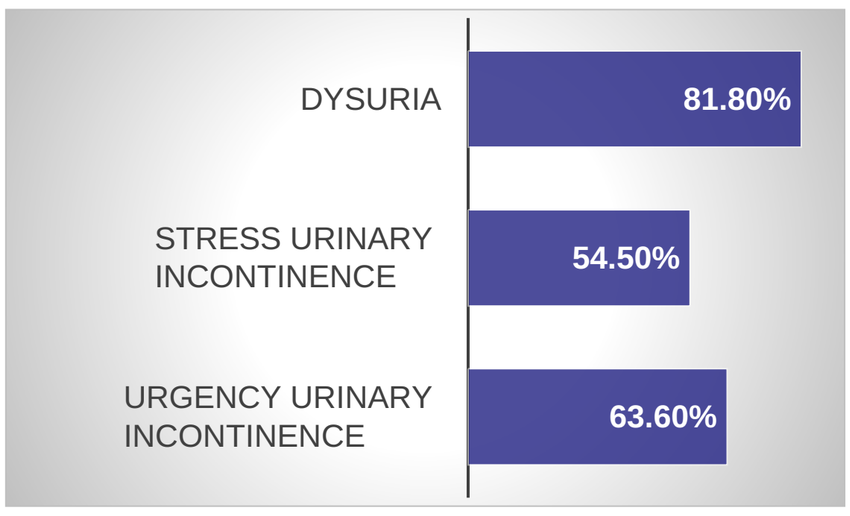
Prostate cancer's (PC) local treatment includes radical prostatectomy and radiotherapy (RT) that has some impact on genito-urinary system despite of the important advances that had been made in techniques of RT. Some patients may have long-term urinary side effects such as increased urinary frequency, urgency, urinary incontinence and dysuria… These symptoms may impact significantly patient's quality of life. These signs can be explained by radiation-included complications like cystitis, ureteral and bladder fistula, urethral and ureteral stricture…(1).

The aim of this study is to evaluate the outcomes of uroflowmetry in patients who underwent radiotherapy for prostate cancer in order to highlight the impact of RT on urinary tract.

Study design, materials and methods

This was a single-center retrospective study including 33 patients who underwent radiotherapy for prostate cancer. All patients had completed radiotherapy at least 12 months before uroflowmetry evaluation to analyse the effect of late complications related to RT on voiding.

We evaluated lower urinary tract symptoms (LUTS) using Urinary Symptom Profile (USP), 3-day frequency-volume charts (FVC), uroflowmetry (UFM) and post-void residual volume (PVR) measurement.



Graph 1: Distribution of Lower urinary tract symptoms

Mean Maximum flow rate	**15.06 ml/s**
Average flow time	40 sec
Mean voided volume	164 ml
Mean Post void residual volume	88.33 ml

Table 1: Mean results of uroflowmetry

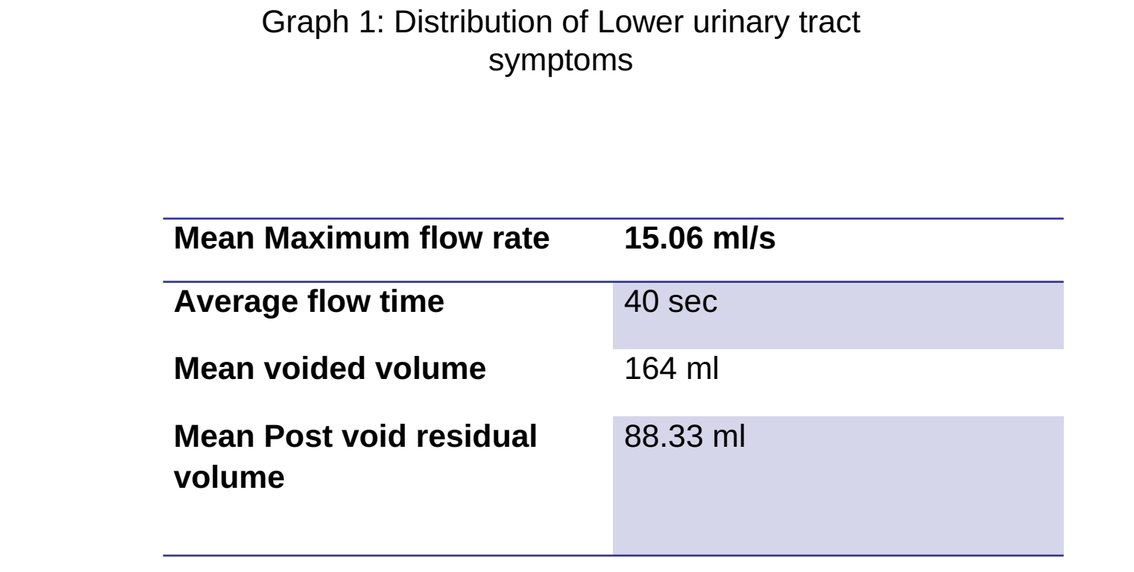


Image 1: Uroflowmetry showing dysuria

Results and interpretation

Medical records of 33 patients were analysed. The average age was 69,45 years. The evaluation of LUTS was done after an average of 22 months after finishing radiotherapy. 72,7% had radical prostatectomy prior to radiotherapy. 45,4% had hormonotherapy and 36,3% had chemotherapy.

About LUTS, 63,6% had urgency urinary incontinence, 54,5% stress urinary incontinence and 81,8% dysuria. Using USP, stress urinary incontinence subscore was 7/9, overactive bladder subscore was 14/21 and dysuria subscore was 5/9. FVC showed increased urinary frequency (average number of daytime voids >10 and nocturnal voids >2) and an average voided volume of 139,2 ml.

All patients had uroflowmetry. The mean maximum flow rate (Qmax) was 15,06 ml/s [5,4 – 35,2]. The average flow time was 40 sec. The mean voided volume was 164 ml with mean PVR of 88,33 ml.

Our study reported some consequences of radiotherapy for prostate cancer, divided into obstructive and/or irritating urinary symptoms, such as nocturia, urgency, dysuria, frequency and urinary incontinence. These symptoms are related to chronic radiation cystitis and urethral stenosis which are the most frequent complications of RT for prostate cancer. Beside radiation, comorbidities like diabetes, hypertension and patient's age total radiation dose, chemotherapy or surgery with postoperative complications are risk factors for RT complications. Voiding dysfunction caused by urethral stricture can lead to upper urinary tract damage. (2)

The use of uroflowmetry as a non invasive test allowed to showcase dysuria using Qmax and voided volume with the measurement of post void residual urine volume.

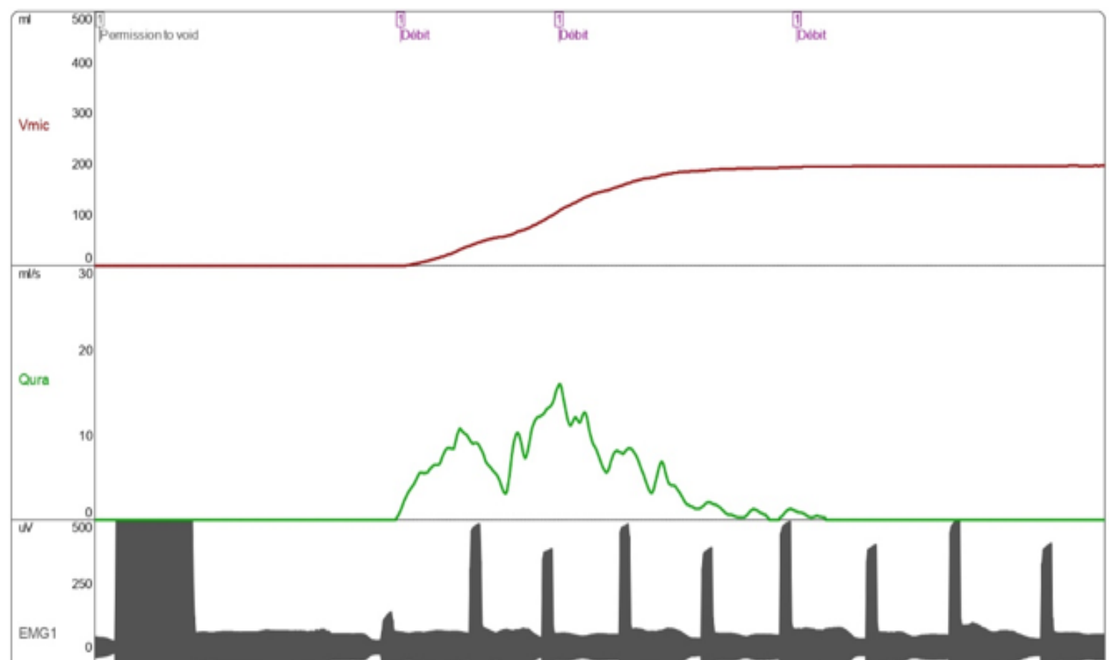


Image 2: Uroflowmetry showing dysuria

Conclusions

Despite the effectiveness of radiotherapy, it can cause damages associated with urinary complications that have impact on patient's quality of life and be sometimes life threatening to the patient. Regular follow-up allow to early detect radiation complications. Uroflowmetry is an indispensable test for patients with LUTS. It can provide objective and quantitative information to understand symptoms.

References

1. Janowski E-M, Kole TP, Chen LN, Kim JS, Yung TM, Collins BT, Suy S, Lynch JH, Dritschilo A and Collins SP (2015) Dysuria following stereotactic body radiation therapy for prostate cancer. Front. Oncol. 5:151. doi: 10.3389/fonc.2015.00151

2. Chorbinska J, Krajewski W, Zdrojowy R. Urological complications after radiation therapy—nothing ventured, nothing gained: a Narrative Review. Transl Cancer Res 2021;10(2):1096-1118. doi: 10.21037/tcr-20-2589