Predictors for intermittent self-catheterization following intravesical botulinum toxin therapy

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ABSTRACT

Intermittent self-catheterisation (ISC) plays a large role in patient reported dissatisfaction and discontinuation of intravesical botulinum toxin A (BTX-A) therapy.

ISC rates have been reported between 6% and 45% and there is limited information regarding predictive factors to appropriately counsel patients. We aimed to identify predictors for ISC post-BTX-A treatment.

METHODS

We retrospectively collected data on patients undergoing their first intravesical BTX-A therapy from January 2017 to July 2021 in a high volume, tertiary centre. Outpatient Urology nurse protocol was to initiate ISC in patients with PVRs over 150mls.

Patients were excluded if they had a long-term catheter or ISC prior to BTX-A therapy.

	Univariable			Multivariable	
	Odds Ratio	95% CI	P-value	Odds Ratio	95% CI
Age ≥ 65	1.24	0.56 - 2.76	0.592		
Gender	1.05	0.49 - 2.24	0.909		
Detrusor overactivity	1.19	0.48 – 2.94	0.703		
Bladder outflow obstruction	3.45	1.19 – 10.1	0.023	3.22	0.95 - 10.92
Prostate	3.85	1.61-9.26	0.002	2.31	0.77 - 6.93
PVR ≥ 50 ml	8.00	3.11 – 20.6	<0.0001	5.74	2.04 – 16.21
Neurogenic	2.39	1.00 – 5.74	0.051		
Mirabegron	0.72	0.26 – 1.98	0.528		
Anticholinergics	1.32	0.47 – 3.74	0.599		
Qmax	0.95	0.90 – 1.00	0.055		
Incontinence surgery	1.78	0.51 – 6.26	0.365		
Dose > 100	5.90	1.96 – 17.8	0.002	3.41	0.94 – 12.32
Stress incontinence	0.31	0.13 – 0.76	0.010	0.61	0.21 – 1.74
Urge incontinence	0.56	0.24 – 1.32	0.185		

RESULTS

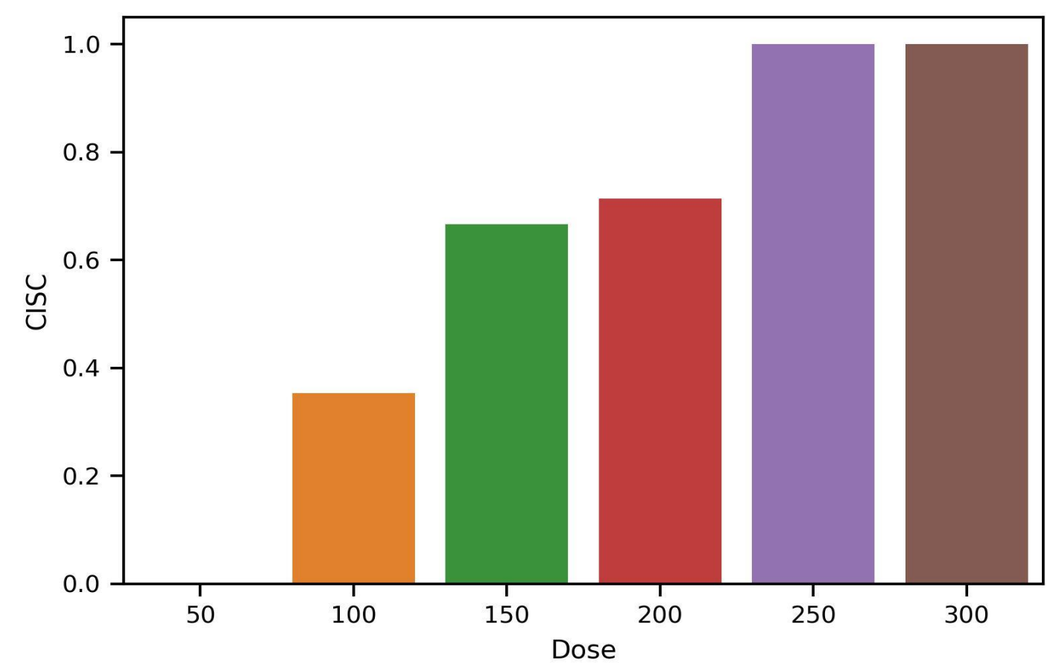
A total of 109 patients were included in the study (55 male, 54 female) with a median age of 64. There were 28 patients with neurogenic bladder dysfunction. Amongst the male cohort, 24 men had urge incontinence secondary to radical prostatectomy. Overall rates of ISC were 41.3% (Male: 41.8%, Female 40.7%).

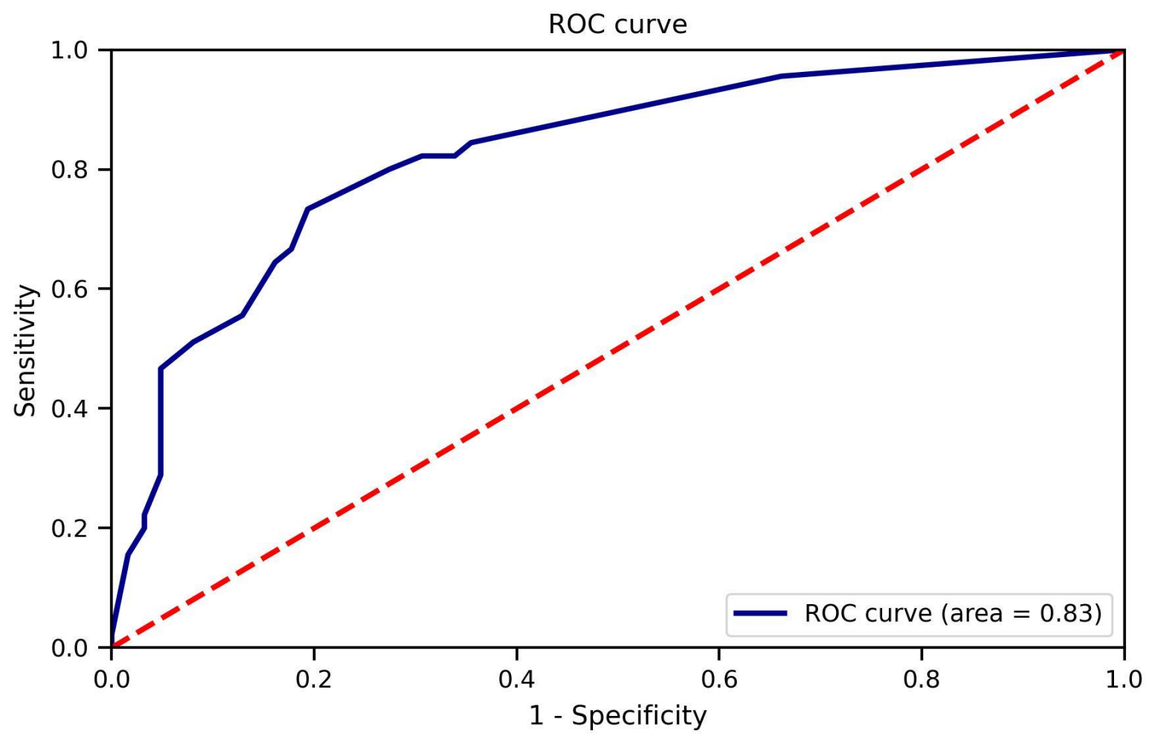
Predictors for ISC included:

- Baseline post-void residual (PVR) ≥ 50 ml (OR 8.0, 95% CI 3.1 – 20.6, p <0.001)
- BTX-A dose > 100 units (OR 5.9, 95% CI 2.0 – 17.8, p=0.002)
- Having a prostate in situ (OR 3.85, 95% CI 1.61 - 9.26, p=0.002)
- Bladder outflow obstruction on urodynamics (OR 3.5, 95% CI 1.2 – 10.1, p = 0.02).

- Stress urinary incontinence was protective against ISC (OR 0.31, 95% CI 0.13 – 0.76, p = 0.01).

A multivariable logistic regression model with these factors yielded a C statistic of 0.83. Bootstrapped internal validation conferred an average optimism of 0.049 and an optimism adjusted C statistic of 0.78.





CONCLUSIONS

The factors identified in this study have been used to generate a predictive model which can be used to assist in counselling patients regarding individual risk for ISC. Validation of this model with other centres is required to increase external validity.

Protocol for ISC initiation requires standardisation and review.