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DOES PROPIVERINE CAUSE POST VOID RESIDUAL URINE ? A STUDY REVIEW IN PATIENTS WITH OAB, OAB AND BPS, AND NEUROGENIC DETRUSOR OVERACTIVITY

Hypothesis / aims of study

It has been a common (mis)conception that post void residual urine (PVR) is a general consequence of all antimuscarinics. However, recent studies have evidenced that antimuscarinics not necessarily adversely impact on PVR. PVR obviously depends to a great extent on the clinical entity being treated. This study review of propiverine treatment aimed at the evaluation of different lower urinary tract dysfunctions with respect to PVR.

Study design, materials and methods

The clinical entities being focussed in this review were OAB, OAB with BPS, and neurogenic detrusor overactivity. For each of these three entities two representative, randomly selected studies were reviewed with respect to PVR. In patients with OAB (study 1 and 2) and those with neurogenic detrusor overactivity (study 5 and 6) propiverine was given as monotherapy. In patients with OAB and concomitant BPS propiverine was given in combination with alpha-adrenoceptor antagonists (study 3 and 4). The following results are based on 6 studies.

Results

The results of the 6 studies are summarized in table 1.

Table 1: Results of a propiverine study review

Study	1[(1)]	2	3	4[(2)]	5[(3)]	6
Patient population	OAB	OAB (elderly)	OAB + BPS	OAB + BPS	Neurogenic detrusor overactivity	Neurogenic detrusor overactivity
Patient number (N)	149	49	75	131	60	70
Propiverine Dose/day	15 mg t.i.d.	15 mg t.i.d.	20 mg□	20 mg□	15 mg t.i.d.	15 mg t.i.d.
PVR – pre (ml)	7.0	6.6±9.0	41.4±54.7	28.8±31.2	49.7±109.4	72.6±115
PVR - post (ml)	9.9	7.2±12.4	65.4±104	49.6±69.2	86.5±109.3	140.9±167
PVR - diff. (ml)	+2.9	+0.6	+24.0	+20.8	+36.8	+68.3
Method of evaluation for PVR	Sono	Sono	Sono	Sono	Sono or catheter	Sono or catheter
Urinary Retention (N)	0	0	2	0	intended	Intended

[(1)] [(2)] [(3)] References (1), (2), (3). Japanese or Korean patients with respective propiverine doses

Interpretation of results

Consistent results were achieved within each of the 3 clinical entities. However, there were remarkable differences between these groups with respect to PVR.

1. In patients with OAB without evidence for bladder outflow obstruction propiverine treatment caused clinically insignificant changes in PVR.
2. In patients with OAB and concomitant BPS suffering from bladder outflow obstruction the pre-existing PVR modestly increased. It can therefore be assumed that max detrusor pressure amplitude was not negatively impacted.
3. Neurogenic detrusor overactivity presents a different clinical entity, concomitant detrusor-sphincter dyssynergia causes PVR. An established therapeutic concept is intermittent catheterisation for bladder emptying together with antimuscarinics for decreasing or abolishing detrusor overactivity. PVR presents no issue of safety concern in patients on intermittent catheterisation. It has been shown for neurogenic detrusor overactivity that propiverine or other antimuscarinics decreased the maximal detrusor pressure amplitude by 30 %, which is obviously not the case in idiopathic detrusor overactivity. We assume that the underlying pathophysiology for detrusor overactivity is different in these entities.

Concluding message

In patients with OAB propiverine causes no PVR. In those patients with OAB and concomitant BPS propiverine in combination with alpha-adrenoceptor antagonists may increase pre-existing PVR, however only to a modest extent. In patients with neurogenic detrusor overactivity, especially in those already on intermittent catheterisation, a decreased maximal detrusor pressure amplitude, increasing PVR almost to urinary retention, is therapeutically desired. PVR causes therefore no safety concerns in this particular group of patients.

The induction or increase of PVR following propiverine depends primarily on the underlying pathophysiologic mechanisms of the clinical entity being treated. Whether propiverine, because of its dual mode of action comprising both antimuscarinic and musculotropic properties, exerts more favourable effects compared to reference antimuscarinics with respect to PVR needs further research.

References
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FUNDING: NONE
DISCLOSURES: NONE
HUMAN SUBJECTS: This study was approved by the For the study conduct itself ethics committee approval has been obtained. and followed the Declaration of Helsinki Informed consent was obtained from the patients.