CAN INTRAVESICAL ONABOTULINUMTOXINA INJECTIONS TRIGGER CARDIAC ARRHYTHMIA? #136

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ABSTRACT

The prevalence of overactive bladder (OAB) increases with age and can be associated with other co-morbidities such as cardiac arrhythmia. Unfortunately, commonly used anticholinergic drugs for OAB can affect the cardiovascular system, leading to tachycardia. However, there is no data considering the influence of intradetrusor onabotulinumtoxinA injections on heart function in idiopathic OAB patients.

The aim of the study was to evaluate the influence of intravesical onabotulinumtoxinaA injections on electrocardiogram (ECG) parameters. Additionally, changes in ECG were analysed in OAB patients without cardiac arrhythmia.

METHODS

Seventy-one patients with idiopathic OAB were approached to participate in this study. Patients were divided into two age-matched sub-groups: with diagnosis of cardiac arrhythmia and without cardiac arrhythmia. Patient with cardiac arrhythmia (extra beats, supraventricular tachycardia, ventricular arrhythmia) were on stable doses of antiarrhythmic drugs (such as: beta-blockers, prokainamid, amiodaron, propafenon) for at least one month.

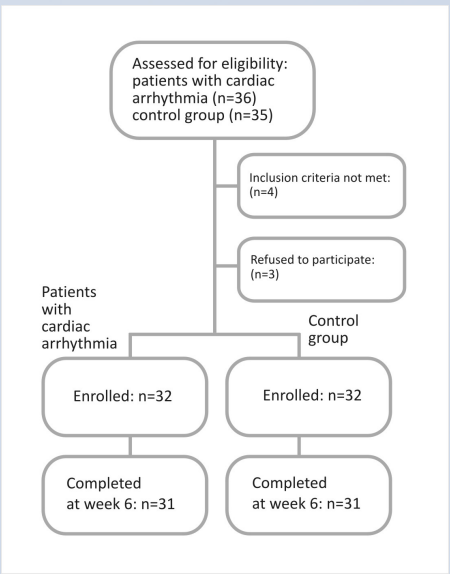

Figure 1. Flowchart of the participants in the study.

During the study, 12-lead electrocardiograms were performed according to the schedule: 2 hours before onabotulinumtoxinA injection procedure, 1 hour after treatment (or later if a patient reported the feeling of an unpleasant sensation in their bladder) and 2 weeks after the day of treatment.

The following parameters were measured: PR, PQ, QT, QTc intervals and QRS duration.

All intervals and QRS complexes were manually assessed and measured in milliseconds (msec) in three cycles in each lead. Prolonged PQ and QTc intervals were determined as ≥200 ms and ≥460 ms, respectively. Changes in the above mentioned ECG parameters and ventricular rate were analysed between each records. After 6 weeks, the patients were asked during a phone-call survey about any abnormalities.

The bladder was instilled with 100ml solution of 2% lidocaine. After 30 minutes, the bladder was emptied and rinsed with 0.9% sodium chloride (NaCl) solution. One hundred units of onabotulinumtoxinA (Botox, Allergan) was dissolved in 10 ml of 0.9% NaCl directly before procedure and was administered during rigid cystoscopy in 20 intra-detrusor injections in 2-3 horizontal lines, except the trigone.

The primary outcome measures were heart rate and QT/QTc intervals. The secondary outcome parameters included changes in PR, PQ intervals and QRS complex.

Statistical analysis was performed with Statistica Statsoft, version 12 package, using the $\chi 2$ test, ANOVA with post-hoc tests and the Student t test, as appropriate. A p value<0.05 was defined as statistically significant.

RESULTS

Baseline demographic characteristics were similar between groups and are summarized in Table 1.

Table 1. Demographic characteristics of overactive bladder (OAB) patient groups.

Variable	Patients with cardiac arrhythmia (n=31)	Patients without cardiac arrhythmia (n=31)	*p*
Age (years)	58.9 ±13.4	58.7 ±13.0	NS
BMI (kg/m^2)	27.8±4.1	27.9 ±3.7	NS
Parity	1.7 ±0.8	1.9 ±0.8	NS
Menopause	24 (77.4)	25 (80.6)	NS

Continuous variables are presented as the mean±SD, categorical variables are presented as number and %.

A slight increase of the mean heart rate (from 71 bpm to 74.7 bpm, p<0.05) was observed in the control group when baseline and post-procedure ECG measurements were compared. This alteration, however, is unlikely to be relevant from the clinical point of view. None of the patients in either study sub-group developed tachycardia or prolonged QTc interval. In 4 patients (2 in each subgroup), prolonged PQ interval was observed, however, this alteration was present before intravesical onabotulinumtoxinA administration. The only statistically findings was a slight increase in HR in the control group when comparing ECG performed 1 hour after injections and at week 2 follow-up visit (Figure 1). However, these results still remained within the normal range. We did not observe any significant differences in analyzed ECG intervals or QRS complex within each subgroup at subsequent measurements, as well as when cardiac arrhythmia and control group were compared. During the phone-call survey at week 6, none of the patients reported any subjective disturbances in heart rate or other cardiologic complaints.

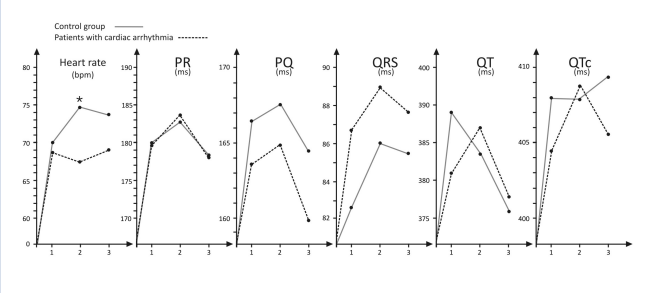

Figure 2. Comparison of ECG parameters between patients with cardiac arrhythmia and control groups during consecutive measurements.
Legend:
1) 2 hours before onabotulinumtoxinA injections procedure;
2) 1 hour after treatment (or later if a patient reported the feeling of an unpleasant sensation in their bladder);
3) 2 weeks after the day of treatment.
* p<0.001

CONCLUSIONS

This observational study provides reassurance that intravesical onabotulinumtoxinA injections are safe for patients with cardiac arrhythmia and do not trigger any changes in heart rate or electrocardiographic abnormalities.