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URINARY EXCRETION OF NGF (NERVE GROWTH FACTOR) AND BDNF (BRAIN DERIVED NEUROTROPHIC FACTOR) IN WOMEN WITH IDIOPATHIC DETRUSOR OVERACTIVITY.

Hypothesis / aims of study

Neurotrophins and neurotrophic factors have arisen in the last years considerable attention from the urological community. The reason lies in the ability of these molecules to induce plastic changes in neural circuits that govern bladder function.
In this study we analyzed the urinary excretion of NGF and BDNF in women with idiopathic detrusor overactivity in order to identify the possible diagnostic value of these substances as a noninvasive method in evaluating women with overactive bladder symptoms.

Study design, materials and methods

Prospective study with a total of 43 women with urodynamic diagnosis of idiopathic detrusor overactivity and a control grup of 31 patients without OAB symptoms and a normal urodynamic study. The mean age of the patients in the study group was 60 years (range 25-81) and the control group of 58 years (range 34-80). All patients completed the IUSS, ICIQ -SF, OABq-SF and B-SAQ questionnaires. Urine samples from 74 patients were collected and levels of NGF and BDNF determined by ELISA (Emax®. Promega, Madison, WI). Results were normalized by the urinary creatinine concentration. NGF/Cr and BDNF/Cr levels in the study group and the control group were compared.
Subsequently, study group patients recived oral anticholinergic treatment (solifenacin 10 mg) and determinations of urinary markers were performed at 30 and 90 days, to determine the influence of treatment on urinary levels of NGF and BDNF.

Results

Statistical analysis showed no significant differences in the excretion of NGF/Cr or BDNF/Cr between the two groups ($p>0.05$). In contrast, treatment with solifenacin 10 mg/day significantly reduced urinary NGF/Cr and BDNF/Cr levels at 30 ($p = 0.03$ and $p = 0.01$) and 90 days ($p = 0.021$ and $p = 0.035$) in study grup.

Table 1: Baseline and after treatment NGF/Cr and BDNF/Cr urinary levels.

	Baseline	**Solifenacin 10mg/d x 30 d**	**Solifenacin 10mg/dx 90 d**	***p***
NGF(pg/mgCr)	23,77±40,12	8,99±13,99	1,47±1,80	<0,05
BDNF(ng/mgCr)	118,37±257,43	17,65±46,16	1,45±2,27	<0,05

Treatment with solifenacin 10 mg / day for 30 and 90 days significantly improved the scores of all questionnaires related to severity of symptoms and quality of life in patients with overactive detrusor ($p<0.05$), but we have not seen a statistically significant relationship between the scores of questionnaires and urinary NGF or BDNF, so they appear to act as independent variables.

Interpretation of results

Although no differences were shown in urinary NGF/Cr and BDNF/Cr levels between patients with detrusor overactivity and the control group, treatment with solifenacin 10 mg/day significantly decreased these levels in the urine of patients with detrusor overactivity, so they could be involved in the pathophysiology of overactive bladder and may be useful as biomarkers in monitoring response to treatment.

Concluding message

Solifenacin 10 mg/day reduces urinary concentrations of NGF/Cr and BDNF/Cr in patients with idiopathic detrusor overactivity. Further studies are needed to determine the true role of NGF and BDNF as biomarkers in detrusor overactivity.

Disclosures
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