

## THE EFFECTS OF AMANTADINE ON LOWER URINARY TRACT DYSFUNCTION AND NOCTURNAL POLYURIA IN PARKINSONIAN PATIENTS

### Hypothesis / aims of study

Amantadine is a drug to treat patients with Parkinson disease and vascular. These patients often have lower urinary tract dysfunction and nocturnal polyuria. In our clinical experiments, amantadine ameliorated lower urinary tract symptoms together with improvement of motor dysfunction in these patients. However, there are few reports to evaluate the effect of amantadine on lower urinary tract dysfunction and nocturnal polyuria. We therefore investigate the effect of amantadine on lower urinary tract dysfunction and nocturnal polyuria in parkinsonian patients.

### Study design, materials and methods

Fourteen parkinsonian patients with lower urinary tract symptom including nine patients with PD and five patients with vascular parkinsonism were recruited. We performed detailed urinary questionnaire and 2 days frequency volume chart / bladder diary before and one month after taking 150 mg amantadine. In addition, further one month after taking 300mg amantadine, we repeated the questionnaire and the chart / diary. Mean number of daytime frequency, nighttime frequency, urinary urgency episode per week, and urge incontinence per month, mean urine volume per void (including daytime urine volume and nighttime urine volume), and residual urine volume by echography were measured. We also observed nocturnal polyuria and any side effect, or changes of neurological and mental manifestations.

### Results

Before amantadine administration, mean number of daytime frequency standard error was 9.5 0.9, nighttime frequency 2.5 0.3, urinary urgency per week 22.3 11.2, urge incontinence per month 6.6 3.6, urine volume per void 130.1 15.2 ml (daytime urine volume per void 125.8 13.2 ml, nighttime urine volume per void 174.4 29.3 ml), and residual urine volume 18.2 11.1 ml. And 6 patients had nocturnal polyuria. After 150 mg amantadine administration, mean number of daytime frequency was 7.3 0.6, nighttime frequency 1.8 0.3, urinary urgency per week 9.31 4.3, urge incontinence per month 5.5 4.0, urine volume per void 155.6 15.0 ml (daytime urine volume per void 149.4 14.8 ml and nighttime urine volume per void 181.8 23.9 ml), and residual urine volume 10.0 6.8 ml. And nocturnal polyuria improved in 2 patients with it. No patient had side effect. Further 1 month after 300mg amantadine administration, mean number of daytime frequency was 7.0 0.6, nighttime frequency 1.6 0.2, urinary urgency per week 1.3 0.7, urge incontinence per month 5.2 4.0, urine volume per void 177.5 29.2 ml (daytime urine volume per void 163.4 28.4 ml and nighttime urine volume per void 205.3 38.2 ml), and residual urine volume 10.0 4.8 ml. And nocturnal polyuria improved in another one patient with it. However, 2 patients developed exacerbation of hallucination and 3 patients developed flashing sensation.

### Interpretation of results

In parkinsonian patients, amantadine lessened overactive bladder, increased urine volume per void (daytime and nighttime), lessened residual urine volume, and improved nocturnal polyuria.

### Concluding message

Amantadine has beneficial effect on lower urinary tract dysfunction and nocturnal polyuria in parkinsonian patients. Amantadine can become a safe and useful alternative for lower urinary tract dysfunction in parkinsonian patients, as well as for motor dysfunction.

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**HUMAN SUBJECTS:** This study was approved by the Chiba University and followed the Declaration of Helsinki Informed consent was obtained from the patients.