

## ASSOCIATION BETWEEN ACTIVITIES OF DAILY LIVING AND VOIDING DYSFUNCTIONS: ASSESSMENT AND MANAGEMENT OF 749 INPATIENTS' VOIDING DYSFUNCTIONS

### Hypothesis / aims of study

Patients with low activities of daily living (ADL) frequently have many diseases that cause voiding dysfunctions, for example, cerebral infarction, diabetes mellitus (DM), and dementia. However, few studies have examined whether low ADL itself is associated with voiding dysfunctions. The purpose of this study was to explore the association between voiding dysfunctions and ADL, especially in bedridden patients.

### Study design, materials and methods

All 749 inpatients at Noto General Hospital (306 males and 443 females) with an indwelling urethral catheter treated between April 2006 and August 2008 were enrolled in this study. Uroflowmetry or voiding cystourethrography was used to evaluate maximum bladder capacity (BC) and post void residual (PVR) at the time the catheter was removed. Only a clean intermittent catheterization (CIC) or a CIC and drug administration (urapidil 30 mg/day and/or distigmine bromide 5–10 mg/day and/or dethanecol chloride 30 mg/day) were performed for patients who had a PVR of 50 ml or more, and we continued the CIC until the smallest PVR of the day fell below about 50 ml. We compared BC, PVR, and clinical courses of bedridden patients to those of nonbedridden patients. We also investigated risk factors for voiding dysfunctions, including age, sex, bedridden state, and pre-existing diseases (cerebral infarction, other nervous system diseases, heart failure, DM, respiratory diseases, dementia, gastrointestinal diseases, musculoskeletal diseases).

### Results

Among the study patients, 154 (25.9%) were bedridden and 595 (74.1%) were nonbedridden. The mean age of bedridden patients was 78.4 years (range 53–99), and that of nonbedridden patients was 74.0 years (range 46–98). BC gradually decreased with age, and there was a correlation between age and BC in each group (bedridden group:  $r = -0.369$ ,  $p < 0.01$ ; nonbedridden group:  $r = -0.173$ ,  $p < 0.01$ ). PVR of 50 ml or more was found in 49 (31.8%) patients in the bedridden group and 100 (16.8%) patients in the nonbedridden group, which was a significant difference ( $p < 0.001$ ) (Fig 1.1). Logistic regression analysis revealed that independent positive risk factors for voiding dysfunctions were bedridden state (odds ratio: 1.9) and DM (odds ratio: 2.6). Urological interventions (CIC only or CIC and drug administrations) decreased the PVR of many patients, and 38 (77.6%) bedridden patients and 85 (85.0%) nonbedridden patients have successfully finished the CIC treatment, which was a nonsignificant difference (Fig 1.2).

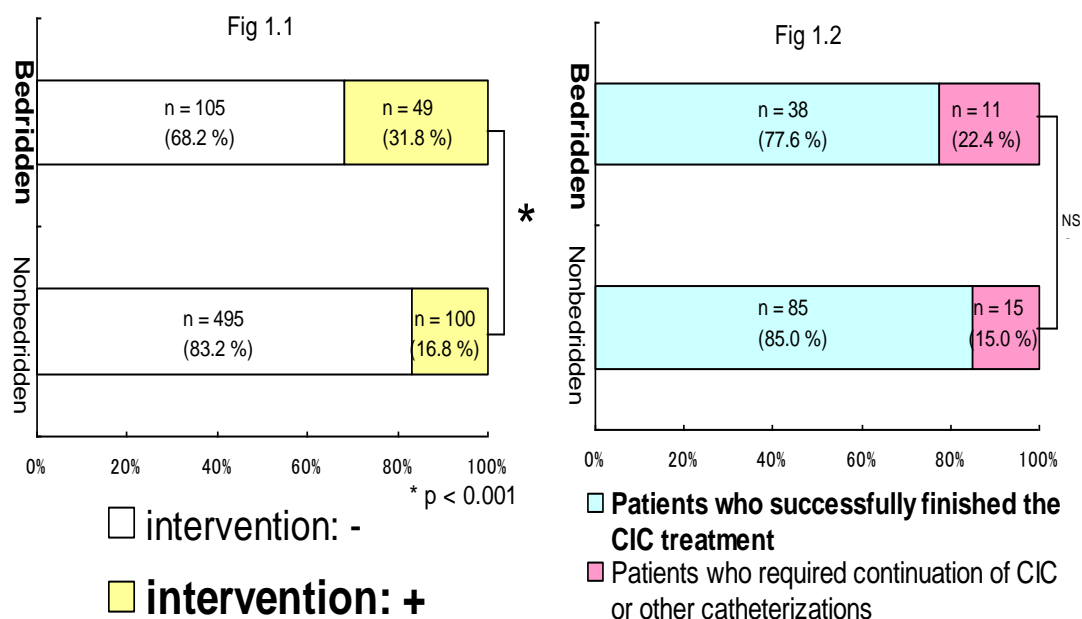
### Interpretation of results

Low ADL, especially in patients in a bedridden state, was an independent positive risk factor for a voiding dysfunction. On the other hand, CIC and medication decreased patients' PVR, and therefore many cases were treatable in both the bedridden and nonbedridden groups.

### Concluding message

Our findings suggest that low ADL is associated with voiding dysfunctions but is not associated with therapeutic efficacy. Patients with low ADL are frequently unaware of their own voiding dysfunction due to their cognitive dysfunction, so we should positively participate in a management of their voiding dysfunctions.

Fig 1.1 shows how many patients required interventions (CIC only or CIC and drug administrations) for their voiding dysfunctions. Fig 1.2 shows the treatment outcome for patients with voiding dysfunctions.



Specify source of funding or grant

None

Is this a clinical trial?

No

What were the subjects in the study?

HUMAN

Was this study approved by an ethics committee?

No

This study did not require ethics committee approval because

Retrospective study

Was the Declaration of Helsinki followed?

Yes

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*Was informed consent obtained from the patients?*

**Yes**

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