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Yoo K H[1], Lee H[1], Lee S[1]
1. *Department of Urology, Kyung Hee University School of Medicine, Seoul, Korea*

COMPARISON OF URODYNAMICS BETWEEN ISCHEMIC AND HEMORRHAGIC STROKE PATIENTS; CAN WE SUGGEST THE CATEGORY OF URINARY DYSFUNCTION IN PATIENTS WITH CEREBROVASCULAR ACCIDENT ACCORDING TO TYPE OF STROKE?

Hypothesis / aims of study
The aim of this study is to compare the urodynamic parameters in ischemic and hemorrhagic stroke patients with bladder dysfunction.

Study design, materials and methods
We retrospectively reviewed medical records such as computed tomography (CT) or magnetic resonance imaging (MRI) and urodynamic study and identified 84 cases among 150 stroke patients underwent urodynamic test due to lower urinary tract symptoms (LUTS) from June 2003 to May 2008. Exclusion criteria are diabetes mellitus (DM) cystopathy, previous pelvic surgery, spinal cord injury, benign prostate hyperplasia (BPH), and other neurologic etiology.

Results
Among analyzed variables of urodynamic study, total bladder capacity, postvoid residual urine volume and bladder compliance have a significant value between ischemic and hemorrhagic stroke group (P = 0.004, P = 0.017, P = 0.007). Ischemic group have detrusor overactivity (DO) (70.7%), detrusor underactivity (DU) (29.3%), and hemorrhagic group have DO (34.6%), DU (65.4%). (P = 0.003).

Interpretation of results
Ischemic group have DO more than DU, and hemorrhagic group have DU more than DO. We have three clues to solve this phemnomenon.
1. Hemorrhagic stroke remains cytotoxic edema after stroke.
2. Although hemorrhagic stroke tend to develop in the identical location, arteriole rupture effect surrounding lacunae.
3. Cortical deficits are relatively more common in ischemic stroke rather than subcortical lesions.

Concluding message
Evaluation of the stroke type may be helpful in the determination of the type of urinary dysfunction and in deciding the appropriate bladder management. The urodynamic study, however, is essential to manage LUTS in stroke patients.

Table. Classifications of Urodynamic Study in Stroke Patients

Characteristics	Ischemic Stroke (n=58)	Hemorrhagic Stroke (n=26)	P-value
No of Pt with DO	41	9	
No of Pt with DU	17	17	0.003

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 eithics committee approval because	**This study consisted of retrospective pure urodynamic study results without another tools or medications. So, this study did not require approval.**
Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**