

FREQUENCY OF DETRUSOR HYPER-REFLEXIA AFTER STROKE: A URODYNAMIC EVALUATION

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ABSTRACT

Objectives: To determine the frequency of urinary incontinence due to detrusor hyperreflexia and to check any effect of sex and pathology on detrusor hyperreflexia in stroke.

Type of Study: Descriptive

Place and Duration of Study: This descriptive study carried out at Armed Forces Institute of Rehabilitation Medicine, Rawalpindi, over one year from august 2003 to august 2004.

Material and Methods: Fifty-six (56) adult cases from both sex having urological complaints after cerebrovascular accidents were assessed both clinically and urodynamically for frequency of Detrusor Hyperreflexia leading to urinary incontinence.

Results: Detrusor hyperreflexia was present in 62.5% of cases. Increased percentage of Detrusor hyperreflexia was found in thrombotic stroke as compared to haemorrhagic stroke. The female population showed slightly increased percentage of detrusor hyperreflexia i.e. 61.5% as compared to 60.5% in males. However, the effects of sex and pathology on presence of detrusor hyperreflexia were not statistically significant as the P-values were greater than 0.05. .

Conclusion: Urodynamic studies were found to be only investigation, which can confirm the presence of detrusor hyperreflexia and provide basis for rationale therapeutics in the management of this condition.

Keywords: Detrusor hyperreflexia, urinary incontinence, cerebrovascular accident, urodynamic study

INTRODUCTION

Cerebrovascular accidents (CVA) are common and serious neurological event in the elderly [1-3]. A number of factors have been identified as predictive of functional outcomes including pre-injury medical status, size and site of lesion and presence or absence of bladder incontinence [4,5].

CVA can have a profound effect on the genitor - urinary function. The voiding dysfunction can range from urinary retention to total urinary incontinence [6,7]. Since CVA

predominantly occurs in the elderly population, the problem is further influenced by coexisting genito-urinary dysfunction (e.g. bladder outlet obstruction in male and stress urinary incontinence in female) [8,9]. Co-morbid medical conditions can affect the genito urinary function (e.g. diabetes mellitus, vascular dysfunction, coronary artery disease) [10]. Furthermore changes secondary to aging (e.g. bladder instability, change in circadian rhythm, influence of hormonal withdrawal in females, cognitive impairment can affect the function of genitourinary tract [11].

Urinary incontinence affects the patient's physical well being and may have a negative influence on self esteem by decreasing the

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patient's desire for social interaction [12]. Persistent urinary incontinence increases the burden on care givers and predisposes the patient to medical complications such as urinary tract infection and eventually to developing nephritis [13].

Detrusor hyperreflexia with uninhibited bladder contraction is the most common urodynamic finding following stroke [14]. However incontinence in CVA patient merits evaluation to determine its etiology. Urodynamic is the study of the transport, storage and evacuation of urine by the urinary tract. It comprises of a number of tests that individually or collectively can be used to gain information about lower urinary tract function and can provide a precise diagnosis of the etiology of voiding dysfunction. Urodynamic studies objectively confirm the presence of detrusor hyperreflexia causing urinary incontinence after stroke [15]. This provides basis for rationale therapeutics in management of incontinence.

The objectives of the study were:

- To determine the frequency of urinary incontinence due to detrusor hyperreflexia.
- To check the effect of sex and pathology on detrusor hyperreflexia in stroke.

PATIENTS AND METHODS

This descriptive study was carried out at Armed Forces Institute of Rehabilitation Medicine, which is a tertiary health care unit receiving referred cases from all the Armed Forces of Pakistan. Duration of study was one year and patients were selected through non-probability convenient sampling.

Inclusion Criteria

Patients of both sex between the age of 40 to 70 years who were stable neurologically and medically and who presented with first time unilateral stroke with urological complaints were included in this study.

Exclusion Criteria

Patients with bilateral signs of stroke on examination, those having diabetes mellitus and those using anticholinergics were excluded. Similarly patient with previous history of urinary incontinence, urological surgery or evidence of prostate hypertrophy were also excluded.

Methods

All the patients were questioned regarding their symptoms including urinary frequency and urge incontinence; and were subsequently subjected to clinical examination.

Urodynamic studies including water cystometrogram was carried out by using DANTEC MENUET COMPACT, on patients who had stroke for at least 3 month. Water cystometry was performed with two channel catheter with one channel used for filling and other for recording pressure. In addition rectal catheter was used to distinguish rise in intravesical pressure due to intrabdominal pressure from contraction of detrusor itself. Filling rate was kept in the range of 30-90 ml per minute. Rise in intravesical pressure due to involuntary detrusor was noted during filling and was regarded as uninhibited contractions if the changes in phasic pressure were found more than 15 cms of water.

The data was analyzed using computer SPSS-10.0. Percentages were calculated to describe the data. P-value was calculated using chi-square test to check the effect of age, sex and type of pathology on detrusor hyperreflexia. P-value of < 0.05 was considered significant.

RESULTS

A total of 56 stroke patients from both sex were evaluated. Out of these 56 patients, 43 (76.8%) were males and 13 (23.2%) were females (fig. 2). Mean age of the patients was 60.14±7.22 years. Forty five (80.4%) of cases had ischemic stroke while 11 (19.6%) had haemorrhagic stroke (fig. 3). Detrusor

hypereflexia was present in 35 (62.5%) patients (fig. 1). Detrusor hyperreflexia was present in 28 (62.2%) cases of ischemic stroke and in 5 (45.5%) cases of haemorrhagic stroke (fig. 4). However the difference between the two groups was found to be statistically insignificant (P-value > 0.05).

The female population showed slightly increased percentage of detrusor hyper-reflexia i.e. 61.5% (8 cases) as compared to 60.5% (26 cases) in males but difference was statistically not insignificant, (P-value > 0.05).

DISCUSSION

Detrusor hyperreflexia is the most common urodynamic finding found during the evaluation of post - stroke urinary incontinence. This was also proved in our study (62.2%). However the percentage of detrusor hyperreflexia found in our study is slightly lower than that found in literature (table). This may be due to the fact that there was longer time interval (At least three months in our study) between onset of stroke and evaluation in our study as compared to other studies in whom evaluation of post-stroke urinary incontinence was conducted in early stages [16,17]. More the time elapsed from acute stage ,lesser is the incidence with more patient regaining continence with passage of time .We might had found higher percentage of this condition had our patients been included in the study earlier in the post-stroke period.

The mean age of our patients was 60.14 yrs as compared to 81.2yrs in study carried out by Burney and Senapati [17] probably due to increased life expectancy and late onset of stroke in the west. As fares male to female ratio is concerned, males were slightly more than females. This is probably due to social values and cultural taboos that the number of female patients reporting for urodynamic evaluation were less.

The number of stroke survivors is on the increase for the last many decades due to advanced medical facilities. Cerebrovascular accident is a serious disorder of the elderly

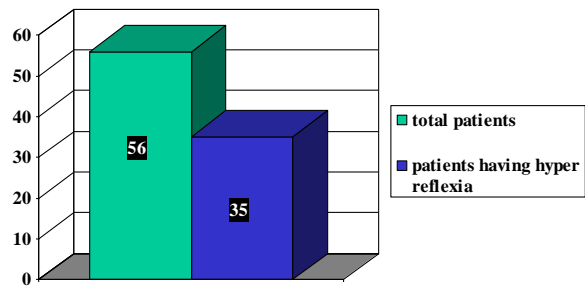


Fig. 1: Patients having detrusor hyperreflexia.

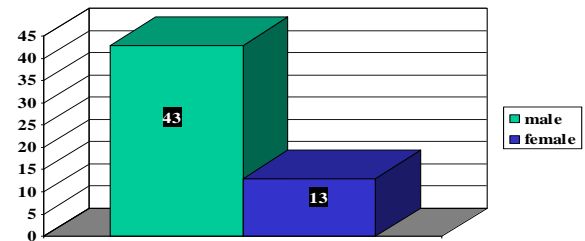


Fig. 2: Male to female ratio.

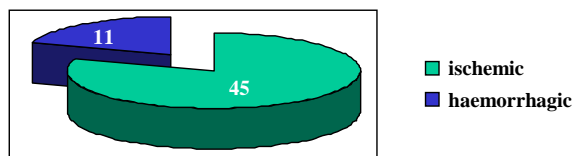


Fig. 3: Underlying pathology

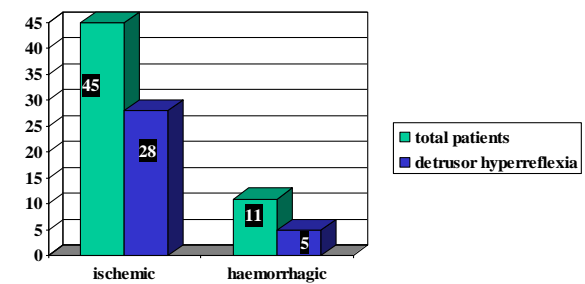


Fig. 4: No of the patients having hyperreflexia.

population ending up with various disabilities and complications for the individual. The urinary incontinence is not a very uncommon problem encountered in these patients. The cost of incontinence should be measured in terms of human misery, embarrassment, isolation and loss of self-respect. Despite the importance and its effects evaluation and subsequent bladder rehabilitation does not receive the due weightage it deserves.

Table: Comparison between different studies.

Description	Present study	Taushida et al[16]	Burney and Senapati [17]
No.	56	39	44
Time*	03 months	11 days-13 yrs	1-12 months
Age in Years(Mean)	60.14	A**	81.2
Male	43	A	27
Female	13	A	17
Detrusor hyper ***	62.5%	66%	45.5%

*Time from CVA to Urodynamic studies,

**Not Available,

***Detrusor hyperreflexia

Urodynamic evaluation is the only investigation, which objectively measures the physiological functions of the lower urinary tract. Therefore it is recommended that any stroke survivor with incontinence persisting three months after the onset of CVA should be evaluated both clinically and urodynamically. After objective evaluation subsequent interventions like behavioral management/ pharmacological or very rarely surgery should be offered to the patient. This will alleviate the physical, social and psychological problems of the patients, which is the ultimate aim of rehabilitation medicine.

We acknowledge that this study is flawed because of certain biases. All the patients belonged to a specific group of population (Armed forces personnel and their families). Also urodynamic studies involve careful participation and communication on the part of patients. Most of our patients were illiterate and might have experienced problems in communicating with the members of medical staff.

Since Urodynamics are a new set of procedures in our setting, some technical problems (rate of filling, temperature control etc.) might have occurred during performance of the procedure and influenced the results.

CONCLUSION

Urinary incontinence due to detrusor hyperreflexia is quite a common problem in stroke patients. It is more often seen in patients suffering from ischaemic stroke in comparison with those having stroke of haemorrhagic etiology.

Pathology and sex of the patients do not have any significant effect on development of detrusor hyperreflexia.

REFERENCES

1. Rafique AB, Muhammad Y, Javed I, Muhammad M.K. Frequency of known risk factors for Stroke in poor patients admitted to Lahore general hospital in 2000. **Pak J Med Sci** 2002; **18(4): 280-3.**
2. Razzaq A A, Khan B A, Baig SM. Ischemic stroke in young adults of South Asia. **J Pak Med Assoc** 2002; **52(9): 417-22.**
3. Rafique A B, Awais E, Muhammad T, Azher S. One month audit of stroke at PIMS. **Pak J Neurol** 1999; **5(1): 12-6.**
4. Jawad SH, Ward AB, Jones P. Study of relationship between pre morbid urinary incontinence and stroke functional outcome. **Clin Rehabil** 1999; **13(5): 447-52.**
5. Ween JE, Alexander MP, D'Esposito M, and Roberts S. Incontinence after stroke in a rehabilitation setting: outcome associations and predictive factors. **Neurology** 1996; **47: 659-63.**
6. Nakayama H, Jorgensen HS, Pedersen PM, Raaschou HO, Olsen TS. Prevalence and risk factors of incontinence after stroke: the Copenhagen stroke study. **Stroke** 1997; **28: 58-62.**
7. Annette A, Van K, Harmen V L, Jacques V L. Urinary incontinence in stroke patients after admission to a postacute inpatient Rehabilitation program. **Arch Phys Med Rehabil** 2001; **82: 1407-11.**

8. Gelber DA, Good DC, Layven LJ, Verhulst SJ. Causes of urinary incontinence after acute hemispheric stroke. **Stroke** 1993; **24**: 378-82.
9. Sakakibara, R T. Hattori, et al. "Urinary function in elderly people with and without leukoaraiosis: relation to cognitive and gait function." **J Neurol Neurosurg Psychiatry** 1999; **67(5)**: 658-60.
10. Eekhof J, De Bock G, Schaapveld K, and Springer M. Effects of screening for disorders among the elderly: an interventional study in general practice. **Fam Pract** 2000; **17(4)**: 329-33.
11. Borrie MJ, Campbell AJ, Caradoc-Davies TH, Spears GF. Urinary incontinence after stroke: a prospective study. **Age Ageing** 1986; **15**: 177-81.
12. Bean JF, Kiely DK, Cairns KD, Morris JN. Influence of poststroke urinary incontinence on disability: the nursing home setting. **Am J Phys Med Rehabil** 2003; **82(3)**: 175-8.
13. Kolominsky PL, Hilz MJ, Neundoerfer B, Heuschmann PU. Impact of urinary incontinence after stroke: results from a prospective population-based stroke register. **Neurourol Urodyn** 2003; **22(4)**: 322-7.
14. Motola JA, Mascarenas B, Badlani GH. Cerebrovascular accidents: Urodynamic and Uroanatomical findings. **J Urol** 1998; **139**: 512 A.
15. Elbadawi A, Yalla SV, Resnick NM. Structural basis of geriatric voiding dysfunctions: Methods of a prospective ultrastructural/ urodynamic study and an overview of findings. **J Urol** 1993; **150**: 1650-6.
16. Tsuchida S, Hiromitsu N, Yamaguchi O, Itoh M. Urodynamic studies on hemiplegic patients after cerebrovascular accident. **Urology** 1983; **21**: 315-9.
17. Burney TL, Senapati M, Desai S, Choudhary ST, Badlani GH. Effects of cerebrovascular accident on micturition. **Urol Clin North Am** 1996; **23**: 483-90.