Correlation of Erectile Dysfunction with Symptomatic Benign Prostatic Hyperplasia Patients

Muhammad Enamul Haque[1], Mohammad Sajjad Hossain[2], Md. Faisal Islam[3], Mehedi Hasan Jony[4], A.K.M. Sirajul Islam[5], Md. Rafiul Alam[6]

Abstract

Background and Purpose: Erectile Dysfunction (ED) and Benign Prostate Hyperplasia (BPH) are two health-related problem which are experienced by men aged over forty years. BPH and ED highly affect man's quality of life. It is necessary to conduct research on the correlations between BPH and ED by using two kinds of valid scores, i.e. the International Prostate Symptoms Scores (IPSS) to determine the severity of BPH and the International Index of Erectile Function-5 (IIEF-5) to detect the existence of ED in BPH patients.

Objectives: The aim of this study was to identify ED in symptomatic BPH patients and the correlations between ED and BPH by using IPSS and IIEF-5 score.

Materials and Methods: This is a cross-sectional study which analyzes correlations between the severity of BPH and the severity ED by using IPSS and IIEF-5 in the Department of Urology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

Results: Thirty (30) subjects fulfilled the inclusion criteria.80% of the symptomatic BPH patients had ED. The incidence of ED is present in symptomatic BPH patients in the age group of 61-70 years is 100% where in the age group of 50-60 years, the incidence of ED is 60%. The symptom of BPH and ED experienced by these patients are also mostly severe, namely 40% and 50% respectively. The Pearson correlation test also showing that significant and strong correlations do exist between the severities of BPH and ED (r = 0.876, p<0.001).

Conclusion: Erectile dysfunction is highly prevalent in the patients with BPH in the range of 80%. The severity of IPSS also correlated with severity of erectile dysfunction. The age group should also be taken into consideration, because increasing age leads to erectile dysfunction

Introduction:

Benign prostatic hyperplasia (BPH) is defined as benign, noncancerous enlargement of the prostate caused by the growth of new stromal and epithelial cells. After the age of forty, the prevalence of BPH increases in men. One in four men have symptomatic BPH and the prevalence of the condition in the age of sixties is four out of ten men, suggesting the progressive nature of the disease. BPH becomes bothersome clinical condition when there are Lower

1. Junior Consultant (Surgery), Upazila Health Complex Bhaluka, Mymensingh, Bangladesh.
2. Junior Consultant (Surgery), National Institute of Kidney Diseases and Urology, Dhaka, Bangladesh
3. Associate professor (Urology), National Institute of Kidney Diseases and Urology, Dhaka, Bangladesh.
4. Assistant Registrar (Urology), Kushtia Medical College, Kushtia, Bangladesh.
5. Medical officer (Urology), National Institute of Kidney Diseases and Urology, Dhaka, Bangladesh.
6. Medical Officer, Gaibandha Sadar Hospital, Gaibandha, Dhaka, Bangladesh

Correspondence: Dr. Muhammad Enamul Haque, Junior Consultant (Surgery), Upazila Health Complex Bhaluka, Mymensingh, Bangladesh. Email:sohaildr@yahoo.com.

Urinary Tract Symptoms or LUTS in patients. Lower Urinary Tract Symptoms suggestive of BPH is highly prevalent among the elderly. Men with LUTS are at increased risk for erectile dysfunction. Erectile dysfunction affects a couple's relationship and the quality of life of the patient and the partner irrespective of age. But the symptoms of erectile dysfunction are not concentrated upon, both by the patient and the physician at least in our country.

Erectile Dysfunction (ED) which is previously known as impotency, has become a medical problem suffered by men with the aging process. ED is defined as a man's inability to maintain enough penile erection to engage in satisfied sexual intercourse with his partner. Erectile dysfunction is much more prevalent in patients with BPH than in men without them. Hence BPH is considered to be an independent risk factor for erectile dysfunction. ED highly impacts the Quality of Life (QoL) of both men and their partners and may cause severe psychological disturbances. The prevalence of ED increases over the age of forty. Several studies have also shown the correlation between ED incidences and Benign Prostatic Hyperplasia (BPH). The Cologne Male Survey has even indicated BPH as one of the ED risk factors. BPH is a risk factor for the occurrence of ED in aged men. Adrenergic tones and Rho kinase increase in BPH patient causing partial obstruction of the bladder neck and voiding dysfunction as well as disturbance in penile erectile functions. The use of the same drugs treating BPH and ED, namely phosphodiesterase-5 inhibitor (PDE-5i) or á adrenergic receptor antagonist prove that both clinical diseases are closely correlate. According to the American Urological Association (AUA), International Prostate Symptoms Score (IPSS) system is used to measure the severity of BPH and International Index of Erectile Function-5 (IIEF-5) is used to identify the occurrence of ED. Most of studies have shown strong correlations between IPSS score and IIEF-5 score that the worsening of voiding dysfunctions also results in the worsening of erectile functions in men over the age of forty.

The successful management of symptomatic BPH patients should include assessments of sexual function and monitoring of quality of life. Men with symptomatic BPH and erectile dysfunction, an appropriate integrated management approach based on each patient's symptoms is warranted.

The study will evaluate the prevalence of erectile dysfunction in the symptomatic BPH patient population in our set-up and to see the correlation between symptomatic BPH and erectile dysfunction.

Methods: Hospital based prospective cross sectional study. Study period was August 2017 to July 2018. Place of study was Department of Urology, Bangabandhu Sheikh Mujib Medical University (BSSMU), Dhaka, Bangladesh. Study Population were men, 50 to 70 years of age group having LUTS attending in the OPD, Department of Urology, BSMMU, Dhaka, were enrolled in this study. Sampling technique was purposive sampling technique. Sample size was total of 30 sample were selected according to the selection criteria for the cross sectional study. Grouping of study subjects were 1. IPSS score related groups 2. IIEF -5 score related groups. Data collection instrument was data collection sheet (appendix-). Data editing cleaning and reduction were done by taking care for omission and illegal entry of data. After compilation the data was presented in the form of tables and figures as necessary. After data collection all quantitative data were expressed as proportion and all categorical data were presented as frequency. Hypothetical tests which assessed correlations between IPSS scores and IIEF-5 scores by using the Pearman correlation test for quantitative variable. Statistical analyses were performed with SAS 9.1.3 for Microsoft Windows (SAS Institute Inc., NC, USA). Results was considered significant if p-value <0.05.

Results:

Thirty (30) subjects fulfilled the inclusion criteria.80% of the symptomatic BPH patients had ED. The incidence of ED is present in symptomatic BPH patients in the age group of 61-70 years is 100% where in the age group of 50-60 years, the incidence of ED is 60%. The symptom of BPH and ED experienced by these patients are also mostly severe, namely 40% and 50% respectively. The Pearson correlation test also showing that significant and strong correlations do exist between the severities of BPH and ED (r = 0.876, p<0.001).

Discussion:

The mean age of the patients was 59.6 years within an age range of 44-88 years in the study. The predominant age group for severe IPSS and ED is 61–70 yrs. This age characteristic is comparable to other the studies in the literatures. This is in line with the studies of Ikuerowo et al (2008) in Nigeria whereby the mean age was 64.8 years within an age range of 46-84 years, and the studies of Glina et al (2006) in Brazil, whereby the mean age was 61.7 years within an age range of 45-82 years.

In the study, according to BPH severity that severe IPSS was mostly prevalent (46.7%) an average IPSS score of 17.97. This result is not too far different from the study of Morales et al (2001) who found an average IPSS score of 19.20, and the study of Shao et al (2008) who found an average IPSS score of 18.4 .This study is also in line with the study of Utomo et al (2012) who showed severe IPSS was mostly prevalent (56%) an average IPSS score of 19.69 and the study of Zuhirman et al (2014) who showed severe IPSS was mostly prevalent (53.3%) an average IPSS score of 19.30.

The BPH patients suffering from ED by using IIEF-5 in the study showed that nearly all (80%) BPH patients suffered from ED and that all 23% had severe ED with a mean IIEF-5 score of 13.97. This result is not too far different from the study of Zuhirman et al (2014) of which found that nearly all (90%) of BPH patients suffered from severe ED is 40% with a mean IIEF-5 score of 10.87 and Morales et al (2001) which found that nearly all (86.36%) of BPH patients suffered from ED with a mean IIEF-5 score of 8.50 and the study. This study is also in line with the study of Shao et al (2008) which found that the average IEF-5 score not too different from the study of Ozayar et al (2008), who found that the BPH patients who suffered from severe ED constituted 36% of the entire BPH patients tested. The Multinational Survey of the Aging Male (MSAM-7) reported that ED may increase significantly in line with the severity of symptoms of BPH patients. Since the BPH patients who sought medical help mostly had mild to severe symptoms, this tended to result in a decrease in IIEF-5 scores in more severe cases of ED (Rosen et al,2003).

About half of the patients (14) had severe IPSS. The IPSS also had age wise variation, with 40% of those in the 51–60 years age group with mild symptoms, and most of them in the 61–70 years group with severe symptoms (86.7%). Age-adjusted EDs prevalence were 53%, 62%, and 71% in men with no/mild, moderate and severe ED, respectively (Hoesl et al, 2005). This signifies increase in prevalence with age (Rosen et al,2003).

In this study, the correlation coefficient for BPH with ED is 0.876, which is highly significant. This means the higher the BPH severity, the higher the ED severity will become. Our study has supported the previous study of Utomo et al (2012) who found highly significant correlations (p = 0.005) between BPH and ED with a correlation power of (r) 0.983 and the study

of Ozayar et al (2008) by using the Pearson correlation test which found highly significant correlations (p < 0.001) between BPH and ED with a correlation power of (r) 0.621 and a negative correlation direction between IPSS scores and the IIEF-5 score of 1. Our study is also in line with the study of Morales et al (2001) which found a significant correlation (p < 0.05) between the IPSS score and the IIEF-5 score of 1 in BPH patient. The study by Glina et al (2006) in Brazil also found a significant negative correlation (p < 0.001) between the IPSS score and the IIEF-5 score of 1 in BPH patients.

Conclusion:

Erectile dysfunction is highly prevalent in the patients with BPH in the range of 80%. The severity of IPSS also correlated with severity of erectile dysfunction. Severity of LUTS & erectile dysfunction are also correlated with increasing age.

References:

1. Abrams Paul, Cardozo L, Fall M, et al. The standardisation of terminology of lower urinary tract function: Report from the standardisation sub-committee of the International Continence Society. Neurourol Urodyn 2002; 21:167-178.

2. Andersson KE. Erectile physiological and pathophysiological pathways involved in erectile dysfunction. J Urol 2003; 170: S6– S14.

3. Alan J. Wein, David Lee. Benign Prostatic Hyperplasia and Related Entities. Philip M. Hanno, Alan J. Wein, BruceMalkowicz, eds. Penn Clinical Manual of Urology. Philadelphia: Elsevier Inc; 2007, p. 483-504.

4. Asim Ozayar, Ali Zumrutbas, Onder Yaman. The Relationship between Lower Urinary Tract Symptoms, Diagnostic Indicators of Benign Prostate Hyperplasia (BPH) and Erectile Dysfunction in Patients with Moderate to Severely Symptomatic BPH. Int Urol Nephrol. 2008; 40: 933-939.

5. Barry MJ, Fowler FJ, O' Leary MP et al; the American Urological association's symptom index for BPH. J Urol 1992;148;1549-57.

6. Behr-Roussel D, Chamiot-Cleric P, Bernabe J et al. Erectile dysfunction in spontaneously hypertensive rats: pathophysiological mechanisms. Am J Physiol Regul Integr Comp Physiol 2003; 284: R682– 8.

7. Benjamin Gonzalez Sanchez · Jesus Cendejas Gomez ·J. Alejandro Rivera Ramirez · Jaime O. Herrera Caceres · Daniel Olvera Posada ·Christian . Villeda Sandoval · Ricardo A. Castillejos Molina ·Guillermo Feria Bernal · Arturo Garcia Mora · Francisco Rodriguez Covarrubias, The correlation between lower urinary tract symptoms (LUTS) and erectile dysfunction (ED): results from a survey in malesfrom Mexico City (MexiLUTS)Received: 7 July 2015 / Accepted: 30 September 2015© Springer-Verlag Berlin Heidelberg 2015

8. Bertaccini A., Vassallo F., Martino F., Luzzi L., RoccaRossetti, Di Silverio, Comunale L. Symptoms,Bothersomeness and Quality of Life in Patients with LUTS Suggestive of BPH. Eur Urol 2001;40(suppl 1): 13–18.

9. Bosch JL. Natural history of benign prostatic hyperplasia: appropriate case definition and estimation of its prevalence in the community. Urology. 1995;46: 34-40.

10. Braun M, Wassmer G, Klotz, T, Reifenrath B, Mathers M, Engelmann U. Epidemiology of erectile dysfunction: results of the 'Cologne Male Survey'. Int J. Import Res. 2000; 12(6): 537-44.

11. Claus G Roehrborn. Benign Prostatic Hyperplasia: AnOverview. Reviews in Urology. 2005;7 Suppl 9: S3-14.

12. Feldman HA, Goldstein I, Hatzichristou DG, Krane RJ, McKinlay JB.Impotence and its medical and psychosocial correlates; results of the Massachusetts Male Aging Study. J. Urol. 1994; 151(1): 54-61.

13. Felsen D, Dardashti K, Ostad M et al. Inducible nitrite oxide synthase promotes pathophysiological consequences of experimental bladder outlet obstruction. J Urol 2003; 169: 1569–72.

14. Gómez Acebo, Rodríguez Vallejo JM, Rodríguez Mora VI, García Alcázar. Quality of Life and Symptomathology in Benign Prostate Hyperplasia in Active Spanish Population. Medicina Clínica. 2000; 114 (3): 81-9

15. Golomb E, Rosenzweig N, Eilam R, Abramovici A. Spontaneous hyperplasia of the ventral lobe of the prostate in aging genetically hypertensive rats. J Androl 2000; 21: 58– 64.

16. Hammarsten J, Hogstedt B, Holthuis N, Mellstrom D. Components of.the metabolic syndrome-risk factors for the development of benign prostatic hyperplasia. Prostate Cancer Prostatic Dis 1998; 1: 157– 62.

17. Hoesl CE, Woll EM, Burkart M, Altwein JE. Erectile dysfunction (ED) is prevalent, bothersome and underdiagnosed in patients consulting urologists forbenign prostatic syndrome (BPS). Eur Urol 2005;47:511e7.

18. Ikuerowo SO, Akindiji YO, Akinoso OA, Akinlusi FM, Esho JO. Association between Erectile Dysfunction and Lower Urinary Tract Symptoms due to Benign Prostatic Hyperplasia in Nigerian Men. Urol Internation. 2008; 80(3): 296-9.

19. Irwin DE, Milsom I, Hunskaar S, Reilly K, Kopp Z, Herschorn S, et al. Population based survey of urinary incontinence, overactive baldder and other lower urinary tract symptoms in five countries:results of the EPIC study. Eur Urol.2006; 50: 1306-14.

20. J. de la Rosette, G. Alivizatos, S. Madersbacher, C. RiojaSanz, J. Nordling, M. Emberton, S. Gravas, MC Michel, M. Oelke. Guidelines on Benign Prostatic Hyperplasia. European Association of Urology. 2006: 5.

21. Joseph J. P., Christopher J. K., Katsuto S., Peter R. C. Neoplasms of the Prostate Gland: Emil Tanagho, Jack WM as editors. Smith's General Urology, Seventeenth Ed. USA: The McGraw-Hill Companies, Inc; 2008. 384-55., uu16.

22. KEVIN McVARY et al; Lower urinary tract symptoms and sexual dysfunction: epidemiology and pathophysiology BJU International Volume 97 Issue s2 Page 23-28, April 2006.

23. Kirby M, Chapple C, Jackson G, Eardley I, Edwards D, Hackett G, et al. Erectile dysfunction and LUTS: a consensus on the importance of co-diagnosis. Int J Clin Pract. 2013; 67: 606-18.

24. Matthew BG, Alan W. Partin, David YC. Lower Urinary Tract Symptoms (LUTS) and Benign Prostatic Hyperplasia (BPH). Robert G. Moore, Jay T. Bishoff, Stefan Loenig, Steven G. Docimo, eds. in Minimally Invasive Urological Surgery. USA: Taylor and Francis Group plc; 2005, p. 545.

25. Madersbacher S, Alivizatos G, Nordling J, Sanz CR, Emberton M, de laRosette JJ. EAU BPH Guidelines. Eur Urol. 2004; 46: 547-54.

26. McVary KT, Rademaker A, Lloyd GL, Gann P. Autonomic nervous system overactivity in men with lower urinary tract symptoms secondary to benign prostatic hyperplasia. J Urol 2005; 174: 1327– 433

27. Michael J Barry, Mary McNaughton-Collins. Benign Prostate Disease and Prostatitis. Lee Goldmen, Dennis Ausiello as editors. Cecil Medicine 23rd ed. Philadelphia: Elseviers Saunders; 2007.

28. Morales Heaton. Hormonal Erectile Dysfunction: Evaluation and Management. Urol Clin North Am. 2001; 28:279–288. 24.

29. Namasivayam S, Minha S, Brooke J, et al. The Evaluation of Sexual Function in Men Presenting With Symptomatic Benign Prostatic Hyperplasia *Br J Urol*. 1998;82:842–846

30. Nugroho Budi Utomo, Ponco Birowo, Nur Rasyid, Akmal Taher. Erectile Dysfunction in Benign Prostatic Hyperplasia with Lower Urinary Tract Symptoms. Indonesian Journal of Surgery. 2012; 39-40 (1-2): 13-15.

31. Oelke M, Bachmann A, Descazeaud A, Emberton M, Gravas S, Michel MC, et al. EAU Guidelines on treatment and follow up of non-neurogenic male lower urinary tract symptoms including benign prostatic obstruction. Eur Urol. 2013; 64: 118-40.

32. Paul Arduca, GradDipVen. Erectile Dysfunction: A Guide toDiagnosis and Management. Middle East Journal of FamilyMedicine. 2004;

33. Persson K, Pandita RK, Spitsbergen JM, Steers WD, Tuttle JB, Andersson KE. Spinal and peripheral mechanisms contributing to hyperactive voiding in spontaneously hypertensive rats. Am J Physiol 1998; 275: 1366–73.

34. Ponholzer A, Temml C, Obermayr R, Madersbacher S. Association between lower urinary tract symptoms and erectile dysfunction. Urology 2004; 64: 772–6.

35. Raymond Rosen et al; Lower Urinary Tract Symptoms and Male Sexual Dysfunction: The Multinational Survey of the Aging Male (MSAM-7) European UrologyVolume 44, Issue 6, December 2003, Pages 637-649.

36. Rosen RC et al; The International Index of Erectile Function (IIEF) ;A multi dimensional scale for assessment of erectile dysfunction. Urology 1997;49;822-30.

37. Rosen RC et al in Sexual medicine; Sexual dysfunction in men and women. Paris, Health Publications, 2004, pp173-220.

38. Rosen RC et al; Development and evaluation of an abridged, 5 –item version of IIEF as a diagnostic tool. Int J Impot Res 1999;11;319.

39. Sidney Glina, Felipe Glina. Pathogenic Mechanisms LinkingBenign Prostatic Hyperplasia, Lower Urinary TractSymptoms and Erectile Dysfunction. Therapeutic Advances in Urology. 2013; 5(4): 211218.

40. Sidney Glina, Antonio Santana, Flavio Azank, Luiz Mello and Edson Moreira. Lower Urinary Tract Symptoms and Erectile Dysfunction are Highly Prevalent in Ageing Man. BJU International. 2006; 97(4): 763-765.

41. Wu CJ, Hsieh JT, Lin JS, Hwang TI, Jiann BP, Huang ST, et al. Comparison of Prevalence between self-reported erectile dysfunction and erectile dysfunction as defined by five-item International Index of Erectile Function in Taiwanese men older than 40 years. Urology. 2007; 69: 743-7.

42. Zuhirman, Nur Rasyid, Yanwirasti, High Incidence of Severe Erectile Dysfunction in Benign Prostatic Hyperplasia Patients. IJMR,Volume- 2,Issue -2,Apr – June 2014