Relation between Benign prostatic hyperplasia and Metabolic syndrome

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Abstract

Objectives: Determine the association between LUTS associated with BPH and metabolic syndrome.

Methods: The study was conducted over 100 patient at Sohag university hospital.

Results: Regarding the relation between BMI and LUTS we found that the mean of BPH volume&prostatic specific antigen was significantly higher in obese patients than normal and overweight patients.

Regarding the relation between diabetes mellitus and LUTS we found that the mean flowrate was lower in diabetic patients than non diabetic patients.

Regarding the relation between hypertension and LUTS we found that mean IPSS and PSA was higher in hypertensive patient than non hypertensive patients.

Conclusion: BPH volume was significantly correlated with each of age, body mass index,waste circumference, triglyceride and cholestrol.

IPSS was significantly correlated with body mass indx and diabetus mellitus.

Keywords: metabolic syndrome, benign prostatic hyperplasia,diabetes mellitus hypertension

Introduction

Benign prostatic hyperplasia (BPH) is a commonly occurring condition, affecting a vast number of men worldwide, and particularly in North America. Lower urinary tract symptoms (LUTS) are the bothersome consequences of bladder outlet obstruction that can result from BPH, and are likely to reduce the quality of life of individuals afflicted by this condition(**1**)**.**

Recent studies have suggested that the Mets may be a contributor to BPH.Important associations between BPH and Mets include the relationship between LUTS and increased body habitus, as measured byobesity and waist circumference. Cardiovascular risk factors, which are important components of the Mets, may also be associated with BPH***(2)***.The exact pathophysiology and mechanisms of these relationships however are yet to be determined. Likely contenders include a pro-inflammatory state, changes in testosterone level, and increased autonomic activity***(3)***.

The metabolic syndrome (Mets) is a multi-factorial constellation of clinical findings that characterize patients suffering from a combination of abdominal obesity, elevated serum triglycerides, lowered HDL cholesterol, increased blood pressure or a high level of fasting plasma glucose.

Patients and methods

The study was prospective study including 100 patients recruited from the urology outpatient clinic of the sohag University Hospital (between May 2017 and October 2017). Inclusion criteria were :patients more than 50 years old patients with lower urinary tract symptoms, evidence of prostatic enlargement on digital rectal examination, B mode U/S > 30 ml. ***(4)***

Exclusion criteria were: patients with neurogenic bladder, patients with uretheral stricture, patients with lower urinary tract stones, any suspicion of cancer prostate by digital rectal examination or PSA.All patients were thoroughly informed about the procedures and informed written

consents were fulfilled. Approval from ethical committee of sohag faculty of medicine was obtained.

The weight, height, and abdominal circumference of the patients were measured, and their body mass index (BMI) was calculated. Systolic and diastolic blood pressure were measured ,digital rectal examination was done.

Triglycerides, cholesterol, glycosylated HB and PSA were measured.

Urowflowmetry and TRUS were done

Result :

The results of our study revealed that the mean age of the patients was 65.27±8.26, mean of BMI was 26.72±3.40 , 34% of our cases were normal BMI and 66% were overweight and obese. Mean waist circumference was 90.44±10.80. Twenty two (22%) of our cases were diabetic, and 32% were hypertensive. Regarding laboratory investigations, we found that mean value of triglyceride was 133.56±35.26 and mean value of cholesterol was 180.36±24.72.

In our study mean BPH volume was 63.68±19.65 and median value of IPSS was 23. Mean of PSA was 2.88±0.90.Regarding flowrate mean of it was 14.43±3.83.

Regarding relation between BMI and LUTS, we found that mean of each of BPH volume,and PSA was significantly higher in obese patients than normal and overweight patientsflowrate (ml/sec) was significantly lower in obese patients than normal and overweight patients, on the other hand median IPSS was non significantly higher in obese than overweight patients and normal patients.Regarding relation between waist circumference and LUTS, we found that mean BPH volume was higher in patients who had waist circumference>90 cm than patients who had waist circumference<90 cm and flowrate was lower in patients who had waist circumference>90 than patients who had waist circumference<90 cm, however mean IPSS and PSA were closely similar whatever waist circumference

Discussion :

Aim of our work was to determine the association between LUTS associated with BPH and metabolic syndrome.

Mean age of our study patients was 65.27±8.26. ***Park et al. (2012)*** in their study found that mean age of their patients was 54.0 (52.0-56.0) ***(5)***, also study of ***Doğan et al. (2015)*** included 78 patients with mean age of 61.83±9.15 (range from 45 to 84 years) ***(6).***

Regarding relation between BMI and LUTS, we found that mean of each of BPH volume,and PSA was significantly higher in obese patients than normal and overweight patients, flowrate (ml/sec) was significantly lower in obese patients than normal and overweight patients, on the other hand median IPSS was non significantly higher in obese than overweight patients and normal patients, this was similar to results of ***Bhindi et al. (2014)*** who found in their larger-scale multiethnic cohort that subjects with a BMI of <25.0, 25.0–29.9, and 30.0–34.9 kg/m2 had a median PV of 44.0 mL, 48.0 mL, and 52.0 mL. Furthermore, in the multivariable analyses, higher BMI was associated with larger PV (beta estimate 0.011; 95% CI 0.005–0.017; $p < 0.001$). Although the absolute differences in median PV between different BMI categories did not reach significance among their Southeast-Asian subgroup ***(7).***

Regarding relation between waist circumference and LUTS, we found that mean BPH volume was higher in patients who had waist circumference>90 cm than patients who had waist circumference<90 cm and flowrate was lower in patients who had waist circumference>90 than patients who had waist circumference<90 cm, however mean IPSS and PSA were closely similar

whatever waist circumference, this was with non significant difference, this was similar to results of ***Rył et al. (2015)*** as they found unexpectedly in their study that neither BMI nor waist circumference were determinants of the prevalence of BPH; however, among their studied men with BPH, they found a high proportion of men who were obese or centrally obese (72 %), which is likely to had an impact on our results(9).

Regarding relation between DM and LUTS, we found that mean flowrate was lower in diabetic patients than non diabetic patients, however mean BPH were closely similar in diabetic and non diabetic.

Median of IPSS and PSA were higher in diabetic than non diabetic patients with significant difference. Regarding relation between HTN and LUTS, we found that mean of each IPSS and PSA was higher in hypertensive patients than non hypertensive patients and flowrate was lower in hypertensive patients than non hypertensive patients . BPH volume was significantly higher in hypertensive patients.

Regarding relation between triglyceride and LUTS, we found that mean of each of BPH, IPSS and PSA was higher in patients who had triglyceride >170 mg/dl than patients who had triglyceride ≤170 mg/dl and flowrate was lower in patients who had triglyceride>170 mg/dl than patients who had triglyceride ≤170 mg/dl . Regarding relation between cholesterol and LUTS, the mean of each of BPH, IPSS and PSA was higher in patients who had cholesterol >200 mg/dl than patients who had cholesterol ≤200 mg/dl and flowrate was lower in patients who had cholesterol >200 mg/dl than patients who had cholesterol ≤200 mg/dl, the difference was non significant except for PSA it was significantly higher in patients with triglyceride >170 mg/dl and cholesterol >200 mg/dl, also ***Rył et al. (2015)*** found that among other metabolic alternations in males with BPH, they observed higher levels of total and LDL cholesterol, lower HDL cholesterol, and the higher prevalence of increased triglycerides above 1.71 mmol/l than in those without BPH(8). From previous studies, it can be determined that MetS and in particular abnormal lipid profiles including hypertriglyceridemia, low HDL cholesterol, and up-regulation of LDL cholesterol—could induce or maintain an inflammatory state within the prostat***(9)***

Conclusion:-

BPH volume was significantly correlated with each of age, BMI,waist circumference , triglyceride and cholesterol.IPSS was significantly correlated with each of age,BMI and DM,but it was not significantly correlated with hypertension , triglyceride , cholesterol and waist circumference .PSA was significantly correlated with each of age,BMI, triglyceride and cholesterol but it was not significantly correlated with waist circumference.Flowrate was significantly correlated with each of age , cholesterol,waist circumference, triglyceride and BMI.

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