Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2017; 5(11E):4643-4647 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI:10.36347/sjams.2017.v05i11.065

Evaluation of Renal function Tests in Obese Hypertensive & Non-Obese Hypertensive Patients in a Tertiary Care Hospital

Dr. Hemant Nemade[1], Dr. Shetkar UB[2], Dr. Mahajan SN[3]
[1]Resident, Department of Medicine, Pravara Rural Medical College, Loni, Maharashtra, India
[2]Professor, Department of Medicine, Pravara Rural Medical College, Loni, Maharashtra, India
[3]Professor and HOD, Department of Medicine, Pravara Rural Medical College, Loni, Maharashtra, India

Original Research Article

***Corresponding author**
Dr. Hemant Nemade

Article History
Received: 19.11.2017
Accepted: 25.11.2017
Published: 30.11.2017

Abstract: Obesity is the second most preventable cause of death after smoking, with health care costs far exceeding the latter. While WHO estimates of 2008 report over 500 million obese individuals worldwide, obesity accounts for up to 70% cases of essential hypertension. Less attention is paid to the link between obesity and chronic kidney disease (CKD), although there is evidence that the steady rise in CKD prevalence is closely associated with increasing obesity. Cross sectional study was carried out among 100 study subjects. Among them two groups i.e. group I of obese with hypertension and group II of non-obese with hypertension having 50 cases each were made. Among obese mean BMI was 31.8± 8.89 kg/m^2 and among non-obese mean BMI was 23.31±1.45 kg/m^2($p<0.05$). Among obese patients mean Sr. Urea was 43.38±30.9, mean sr. creatinine was 1.64±1.49, mean Sr.uric acid was 6.63±10.51 and among non-obese patients mean Sr. urea was 40.6±31.52, mean sr. creatinine was 1.85±1.8, mean Sr. uric acid was 6.07±10.31 ($p>0.05$). Among obese mean eGFR was 63.42±33 ($P>0.05$). Periodic evaluation of renal functions among the obese hypertensive cases will reduce the incidence of renal diseases.
Keywords: Renal disease, obese, hypertension.

INTRODUCTION

Obesity is the second most preventable cause of death after smoking, with health care costs far exceeding the latter [1]. While WHO estimates of 2008 report over 500 million obese individuals worldwide, obesity accounts for up to 70% cases of essential hypertension [2].

Less attention is paid to the link between obesity and chronic kidney disease (CKD), although there is evidence that the steady rise in CKD prevalence is closely associated with increasing obesity [3].

The mechanisms by which obesity produces kidney damage are not yet fully understood but likely involve a combination of hemodynamic, metabolic, and inflammatory changes. Activation of the sympathetic nervous system, Renin Angiotensin Aldosterone system, physical compression along with metabolic disorders (e.g. diabetes, dyslipidemia), glomerular hyper filtration and inflammation, may cause renal injury[3].

While several western studies have confirmed the association of obesity alone as a risk factor for renal insufficiency, there are no controlled studies comparing obese and non-obese hypertensive patients and their clinical profile. Studies in Indian population on the same are almost non-existent. Awareness of the association between obesity, hypertension and renal insufficiency is extremely important to adopt preventive and therapeutic measures for these risk factors thereby minimizing significant morbidity and mortality.

Hence we have decided to study the clinical profile and prevalence of renal insufficiency in obese and non-obese hypertensive patients in a tertiary care hospital.

AIM & OBJECTIVES

- To study the clinical and biochemical profile of obese and non-obese hypertensive patients in a tertiary care hospital.
- To estimate the extent of renal insufficiency in obese and non-obese hypertensive patients in a tertiary care hospital.

MATERIALS AND METHODS

A cross sectional study was carried out among 100 subjects in a tertiary care hospital for a period of 2 years. Ethical clearance was taken from the institute prior to the start of the study.

Study subjects were divided into 2 groups

Group I: Comprised of 50 obese with hypertension patients.

Group II: Comprised of 50 non-obese with hypertension patients.

Procedure

A predesigned and pretested questionnaire was used. The following parameters were examined: Anthropometric measurements were done, BMI was calculated in kg/m^2 and blood pressure was recorded in supine position after a rest of 10 min with mercury sphygmomanometer. In which systolic blood pressure and diastolic pressure were recorded. Renal function test was done among all the 100 subjects. In that serum urea level and serum creatinine level were recorded. Serum uric acid level, Serum Electrolytes and Lipid profile were also recorded.

GFR was calculated using the simplified Modification of Diet in Renal Disease (MDRD) formula. Renal insufficiency was defined in the protocol as a GFR by MDRD < 60 ml/min per 1.73 m^2 and the degree of renal function was graded as per the National Kidney Foundation guidelines [4]**.**

Data collection and analysis: All the data was collected and complied in Microsoft excel and analysis was done using parametric est. for qualitative data chi square test was used and for quantitative data student t test was used.

RESULTS

Table-1: Distribution of variables in study group

Variables	Group I	Group II	P value
Age in years	59.7± 12.58	60.18± 11.06	0.8
Weight in kgs	78.43±10.1	66.28±8.64	<0.05*
Height in cms	159.98±8.09	168.34±9.96	<0.05
BMI in kg/m^2	30.58± 1.9	23.31±1.45	<0.05*
Systolic BP	135.4 ± 8.84	138.8 ± 16.7	0.2
Diastolic BP	85.28±5.13.	87.2±7.9.	0.15

Table1 shows the different parameters where it was seen that only weight, height and BMI showed statistical significance. (p<0.05).

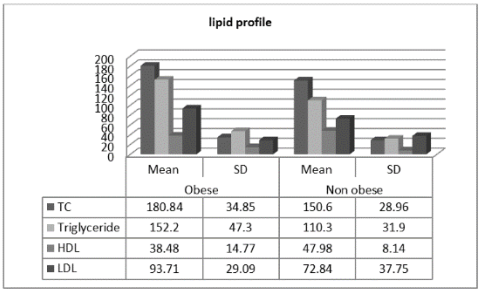

Fig-1: Lipid profile

Fig-1: shows the lipid profile in which all the parameters showed statistical significance except LDL

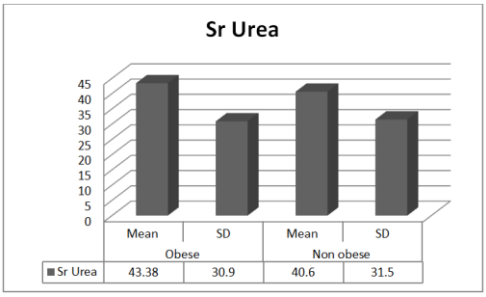

Fig-2: Serum Urea

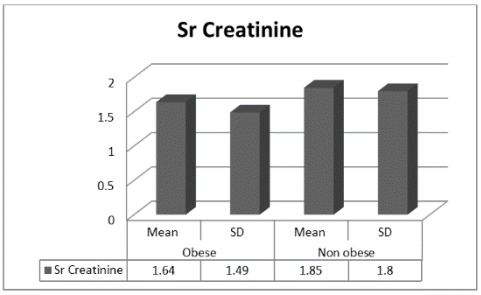

Fig-3: Serum Creatinine

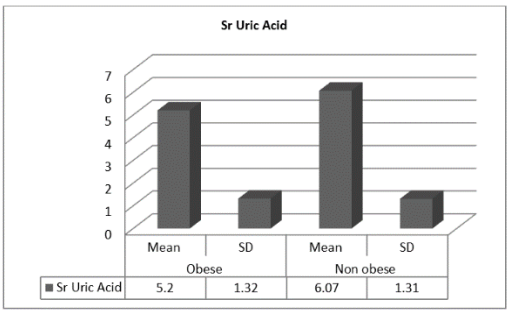

Fig-4: Serum Uric Acid

Figure 2, 3 and 4 shows the RFT results were values among obese group were increased as compared to non-obese group. No statistical significance was seen.

Table-2: eGFR values

eGFR	Obese		Non obese		P value
	Mean	SD	Mean	SD	
eGFR	63.42	33	64.34	37.03	0.4

Table 2 shows the e GFR values were p value was 0.4 which showed no statistical significance.

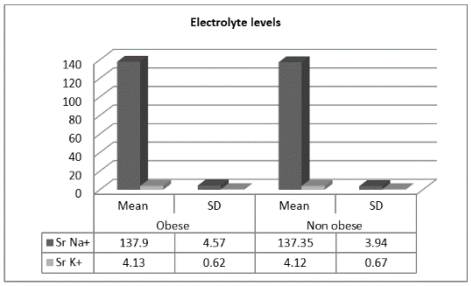

Fig-5: Electrolyte balance

Figure 5 shows the electrolyte balance where it was seen that the mean and standard deviation were slightly increased among the obese group as compared to non-obese group.

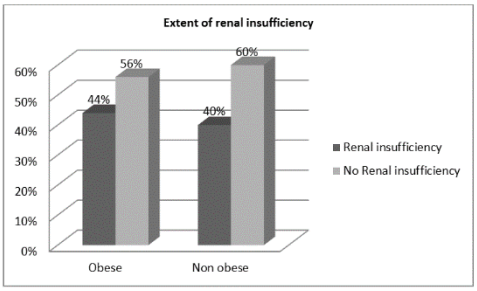

Fig-6: Extent of renal insufficiency

Figure 6 shows the extent of renal insufficiency, where among obese group 44% had renal insufficiency and among non-obese group 40% had renal insufficiency. P value =0.3, shows no significance.

DISCUSSION

Study by Gupta V *et al.* [5] showed that mean age among non-obese was 44.2±7.03, and among obese was 44.6±6.6 (p=0.8). Similar findings were seen in present study. In study by Gomez P *et al.* [6] it was seen that mean age of obese patients was 61.9±10.7 years.

Study by Gupta V *et al.*[5] showed that mean weight among non-obese was 64.9±5.76, and among obese was 92.7±6.15, mean height among non-obese was 1.7±0.03, and among obese was 1.7±0.03, mean BMI among non-obese was 22.49±1.37, and among obese was 31.9±1.07. BMI showed significance same like present study. Study by Abellan *et al.*[7] showed that mean BMI among non-obese was 33.35±2.82, and among obese was 33.67±3.42. Osafo C *et al.* [8] mean body weight was 75kg and mean body height was 166±8 cm among obese patients. BMI was 30.68±2.36kg/m2 and 23.04±1.87 kg/m2 among obese and non-obese group respectively. Study by Zayed *et al.* [9] showed that mean TG among non-obese was 150±31, and among obese was 439.4±190.5 (p=0.00). Mean HDL among non-obese was 48±0.8, and among obese was 33.3±7.7. (p=0.00). Mark David *et al.*[10] showed that mean sr. creatinine among non-obese was 93.8±34.4, and among obese was 96.7±54.0 (p=0.69.Study by Zayed *et al.* [9] showed that mean sr. creatinine among non-obese was 0.6±0.1, and among obese was 0.6±0.1 (p=0.9). Mean sr. urea among non-obese was 12.5±4, and among obese was 11.4±3.6 (p=0.9). Mean sr. uric acid among non-obese was 3.5±0.8, and among obese was 4.3±0.9 (p=0.000). Study by Gupta V *et al.* [5] showed that mean eGFR among non-obese was 116.1±7.7, and among obese was 96.2±22.2.showed significance. In present study among obese group 44% had renal insufficiency and among non-obese group 40% had renal insufficiency (P value =0.3), shows no significance. Extent of renal insufficiency among obese was 44% and among non-obese was 40%.

Study by Gomez P *et al.* [6] showed that 22.8% obese hypertension had renal insufficiency. Osafo C *et al.* [8] showed that 46.9% of obese hypertensive had renal insufficiency.

CONCLUSION

The study concluded that hypertension is a major risk factor in development of renal insufficiency and the presence of obesity further increases the prevalence of the disease. We also concluded that obesity is an individual contributing factor for development of chronic kidney disease. Early onset of hypertension increases the mortality and morbidity among patients. There is a greater need for preventing the cause of the overweight and obesity and its management.

REFERENCES

1. WHO. Obesity and over weight. October 2016. Accessed from: [http://www.who.int/mediacentre/factsheets/fs311/en/]
2. Vasilios Kotsis, Stella Stabouli, Sofia Papakatsika, ZoeRizos and Gianfranco Parati. Mechanism of obesity induced Hypertension. Hypertension Research; 2010: 33, 386-393.
3. Hall ME, doCarmo JM, da Silva AA, Juncos LA, Wang Z, Hall JE. Obesity, hypertension, and chronic kidney disease. International Journal of Nephrology and Renovascular Disease.2014; 7: 75–88.
4. Levey AS, Coresh J, Balk E, Kausz AT, Levin A, Steffes MW, Hogg RJ, Perrone RD, Lau J, Eknoyan G. National Kidney Foundation practice guidelines for chronic kidney disease: evaluation, classification, and stratification. Annals of internal medicine. 2003 Jul 15;139(2):137-47.
5. Gupta V, SushmaKumari, Ajit Kumar. Comparision of Renal Profile of Obese Hypertensive Patients with Non Obese

Hypertensive Patients. GJRA - Global Journal for Research Analysis. August 2017; vol 6: issue 8.

6. Gomez P, Ruilope LM, Barrios V, Navarro J, Prieto MA, Gonzalez O, Guerrero L, Zamorano MA, Filozof C, FATH Study Group. Prevalence of renal insufficiency in individuals with hypertension and obesity/overweight: the FATH study. Journal of the American Society of Nephrology. 2006 Dec 1;17(12 suppl 3):S194-200.
7. Abellán J, Leal M, Hernández-Menárguez F, García-Galbis JA, Martínez-Pastor A, de Vinuesa SG, Luño J. Efficacy of moxonidine in the treatment of hypertension in obese, noncontrolled hypertensive patients. Kidney International. 2005 Jan 31;67:S20-4.
8. Osafo C, Mate-Kole M, Affram K, Adu D. Prevalence of chronic kidney disease in hypertensive patients in Ghana. Ren Fail. 2011;33(4):388-92.
9. Zayed HS, Younis G, Bader R, Amin A. Prevalence of preclinical renal dysfunction in obese Egyptian patients with primary knee osteoarthritis, preliminary data. The Egyptian Rheumatologist. 2013 Oct 31;35(4):239-44.
10. Jesky MD, Hayer MK, Thomas M, Dasgupta I. Do Obese Individuals With Hypertension Have More Difficult-to-Control Blood Pressure and End Organ Damage Than Their Nonobese Counterparts?. The Journal of Clinical Hypertension. 2015 Jun 1;17(6):466-72.