

Study of High Sensitive C Reactive Protein [HsCRP] in Obesity



Medical Science

KEYWORDS : High Sensitive C Reactive Protein, Obesity, BMI

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ABSTRACT

OBJECTIVE: 1. To study the level of HsCRP in different class of obese people without past history of Hypertension [HTn], Diabetes Mellitus [DM], Ischemic Heart Disease [IHD], Cerebrovascular Diseases [CVD]. 2. To study the correlation of HsCRP with Body Mass Index [BMI], Waist Circumference and S.High Density Lipoprotein [HDL] levels. **MATERIAL AND METHODS:** This study consisted 50 patients [pts], either admitted or attended Outdoor department at General Hospital, who had high BMI value and No past history of HTn, DM, IHD, CVD. All pts were subjected to routine investigations as well as HsCRP levels. The results were assessed in terms of BMI, Waist Hip Ratio, S.Lipids as well as HsCRP levels in obesity and their correlations. **RESULT:** 1. Out of 50 pts, 38% were male while 62% were female and maximum 80% in age group of 40-60 years. 2. Most cases with high HsCRP level is seen in obesity class II {48%} and class III {40%}. 3. BMI has a strong and positive relationship with HsCRP. 4. Waist circumference > 90 cm for male is associated with 34% high HsCRP level and Waist circumference > 80 cm for female is associated with 60% high HsCRP level. 5. S.HDL below 40mg/dl is associated with 60% of high HsCRP level

INTRODUCTION

Obesity is rapidly growing health problem across the globe and India has 24 million obese people.

Obesity is important cause of morbidity and mortality associated with various chronic diseases like cardiovascular diseases, DM, hypertension and stroke.

However, HsCRP level is significantly increase in obesity as its level is also associated with body mass index and fat mass.

HsCRP is golden inflammatory marker, has been shown to elevated level in patient of obesity without in association of CVS disease, DM, hypertension and stroke.

HsCRP can be used as

1. Inflammatory marker for various disease.
2. Independent risk factor for cardiac disease.
3. Screening tool for various therapy for cardiac disease and other diseases.

AIM AND OBJECTIVES

1. To study the level of HsCRP in different class of obese people without past history of Hypertension [HTn], Diabetes Mellitus [DM], Ischemic Heart Disease [IHD], Cerebrovascular Diseases [CVD].
2. To study the correlation of HsCRP with Body Mass Index [BMI], Waist Circumference and S.High Density Lipoprotein [HDL] levels.

MATERIAL AND METHOD

Fifty patients, who were admitted or attended OPD of a general hospital, who has high BMI value according to BMI criteria for Asian Indian population, who has no past history of HTN, DM, IHD and CVA Were subjected to routine investigation as well as HsCRP level

The result were assessed in term of BMI, waist hip ratio, serum lipids and HsCRP level in obesity and their correlation

The Inclusion criteria included all cases of obesity according to BMI criteria for Asian population without past history of HTN, DM, IHD and stroke.

OBSERVATION

In present study, fifty cases of obesity, who were assessed for routine investigation of s.lipid, FBS, PPBS, ECG, BMI measurement, waist – hip ratio. and then subjected to HsCRP level.

In our study there are 31 females and 19 males, with age group varies from 20 year to 60 year. The observations of

the study are discussed below :

1. In this study age group of 41 to 50 yr and 51 yr to 60 yr, obesity prevalence is 44% & 52% respectively, while in age group 21 to 30 & 31 to 40 yrs, obesity prevalence is 0% & 4% respectively. Obesity is most commonly seen in age group of 40 to 60 yrs age group.
2. In this study, Obesity prevalence in male is 38% while in female is 62%. This suggests, Obesity prevalence is more common in female as compared to males.

Table I - Hs CRP level and Obesity Classes

Obesity Classes (BMI)(kg/m ²)	No. of Cases with high hs-CRP level	No. of Cases with Normal hs-CRP level
I (25-29.9)	03(6%)	01(2%)
II (30-34.9)	24(48%)	02(4%)
III (≥35)	20(40%)	00(0%)

Table I gives information about relation between BMI and HsCRP level. In obesity class I, class II and class III there is high level of HsCRP is seen, it is respectively 6%, 48%, and 40%. Most of cases with high HsCRP level is seen in obesity class II and class III.

The correlation coefficient between HsCRP level and BMI is 0.42 which is suggestive of significant positive relation between them.

Table II – HsCRP level and waist circumference

Waist circumference	No of cases with high HsCRP level	No of cases with normal HsCRP level
Male (>90cm)	17(34%)	2(4%)
Female(>80cm)	30(60%)	1(2%)

Waist circumference more than 90cm for male and >80cm for female is related with high level of HsCRP, it is 34% for male and 60% for female.

The correlation coefficient between HsCRP and waist circumference is 0.17 which suggestive of significant positive relation between them.

Table III - HsCRP and S.HDL

S.HDL	No of cases with high HsCRP level	No of cases with normal HsCRP level
≥40	17(34%)	2(4%)
<40	30(60%)	1(2%)

HDL below 40mg/dl is associated with 60% of high HsCRP level

and HDL ≥ 40 is associated with 34%.

The correlation coefficient between HsCRP and s.HDL is -0.21 which suggestive of significant negative relation between them.

CONCLUSION

50 patient with obesity were assessed for BMI, waist circumference, waist – hip ratio, s.lipid & HsCRP level on the basis of present study, it can be concluded that--

1. The incidence of obesity in study population was more commonly seen with age group 40 -50yr and 50 – 60yr respectively is 44% and 52%.
2. Obesity prevalence is more in female patient than in male on study population which is 62% in female and 38% male.
3. Body mass index has strong and positive relationship with

HsCRP level. Its correlation coefficient is 0.42 in study population.

4. Waist circumference is also showing positive relationship with HsCRP level. Its correlation coefficient is 0.17 in our study population.
5. S.HDL is negatively associated with HsCRP level .its correlation coefficient is -0.21 in study population.
6. Cases with high HsCRP level is seen mainly in obesity class II{48%} and class III{40%}.

HsCRP level is significantly and independently associated with obesity without in presence of co-morbid disease like HTN, DM, and IHD.

REFERENCE

1. Harrison's principle of internal medicine- 17th edition vol.1 ch;74, page no.462-473. | 2. Premier of obesity 2011 (author dr. Banshisaboo&dr.shashantjoshi) | 3. Medicine update; APICON 2009 vol -1; ch:7, page no. 50-56. | 4. Study on anthropometric indices, lipid profile, and hscrp level in adult. Dr. suneetachandokar et al. International journal of applied biology &pharma. Tech. Vol.2: issue 3 ,2011. | 5. Relationship of hscrp to body fat mass,BMI, W-H ratio waist cir. Cheng chiehlín et al, BMC public health 2010.10;579. | 6. International journal of obesity. (2010), 34,899-907. | 7. Current diabetes review, 2006, 2000-000, metabolic obesity; the paradox between visceral and subcutaneous fat, osamahamdy, joslin diabetes centre, boston. | 8. Anatomy and physiology, 3 rd edition, Benjamin cummings. 2008 ISBN 0-8053-0094-5 (author e marieb). | 9. Diabetes care, 2009 jun; 32 (6); 1068-75 (author porter SA). | 10. Prevalence of obesity, diabetes and obesity related risk factor; 2001 "JAMA volume 289, Page 76-79 (2003). | 11. Association between obesity, HsCRP ≥ 2 and subclinical atherosclerosis. Implication for JUPITOR trial, multi ethnic study of atherosclerosis AHA 2009, 120552. | 12. Hansson. G.K. inflammation, atherosclerosis and coronary artery disease. N Engl J med. 2005, 352 (16) 1685-1695. | 13. Journal de paediatrics, C - reactive protein as an indicator of low intensity inflammation. Volume 117, No.1, Page 477-480, 2006. | 14. Endothelial dysfunction related to insulin resistant and inflammation biomarker level in obese children. european journal of endocrinology, Volume 156, No. 4, page 497-502, 2007. | 15. Journal of American academy of dermatology (2007), volume 56 page no. 917-910. | 16. British journal of dermatology 2011, issue 4, page no.743-750.