DOI: 10.21276/aimdr.2018.4.6.ME5

Original Article ISSN (O):2395-2822; ISSN (P):2395-2814

A Study on C-Reactive Protein in Metabolic Syndrome.

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Received: August 2018
Accepted: October 2018

ABSTRACT

Background: Metabolic syndrone is associated with, obesity,diabates mellitus,dyslipedemia hypertension, and insulin resistance, C-reactive protine, CRP is one of the risk factors for caronary artery disease. It is a sensitive marker for inflammation. Aim: Toassess the CRP in patients with obesity. **Methods:** In our study we have examined 798 subjects during the year 2016 and 2017. After taking the detailed history physical exmination was done. Blood pressure was recorded twice. Height and weight was caliculated to determine the BMI. Trained para medical persons were involved in this procedure. Blood sampleswas send for CRP, cholesterol, HDL cholesterol and LDC cholesterol, triglycenides, uric acid and fasting blood sugar. **Results:** Average age of male was 55 years female was 52 years in classI obesity lipid profile and c-reactive proteins are normal lipids and C-reactive protiens are elivated in class III obesity paients. CRP level are increased in 39.5% in class III obese patients. Serum cholestrol and triglycerides also increased in class III obese patients. **Conclusion:** In our study lipids and C-reactive protiens are increase with class II and class III obese patients.

Keywords: Metabolic syndrone, C-reactive protein, obesity, caronary artey disase.

INTRODUCTION

Obesity is a major public health problem worldwide. National instituties of heallth NIH and WHO defines as normal BMI as 18.5 – 24.9, over weight is defined as BMI 25 – 29.9. Class I obesity is 35 – 39.9 class III extreme obesity is BMI > 40.[1] Bason RB. Telling patients thet are overweight? Or obese? An insult or effective interrentus? Asch internal med. 2011 feb 28.171.[4] C-Reactive protien, the acute phase protien is a sensitive marker of inflammation. Normal plarma CRP level are < 0.8 mg/L high risk > 3.0 mg/l.[2] HDL cholesterol is about 40mg/dl. LDL cholesterol is about 140mg/dl. Plasma CRP levels are low is healthy subjects. Studies shows that increased CRP level are associated with increased morbility and maortality. Obesity and over weight is also associated with increased incidence of caronary artey disease with increased morbility and mortality.

Obesity and over weight is also associated with increased incidence of metabolic syndrome and caronary artey disease. Between 1980 and 2013 there is 8% increase in obesity worldwide.[3]

Metablioc syndrome is define as the presence of any three of following waist measurement of 40 inches or more for men and 35 inches or more forwomen, triglycerides level of 150mg/dl. Above; HDL cholesterol less than 40mg/dl for men and less than 50mg/dl for women blood pressure of 135/85mhg or above and fasting blood glucose 100mg/dl or above. The relationship between overweight and obesity and diabetes, hypertension and caronary artery disease is thought to be due to insulin resistance and compenstory hyper insulaenima.[5-10]

According to study conducted by WHO in 2014 more than 1.9 billion adults who were 20 years are overweight.[11] Adipose tissue is passive storage depot for fat and it produces pro inflammatory cytokine, interlenkin-6 which involves in metabolism. Interleukin 6 has inflammatory properties and stimulates acute phase protein production; interlenkin-6 may induce low grade systemic inflammation in person with excess body fat.[12]

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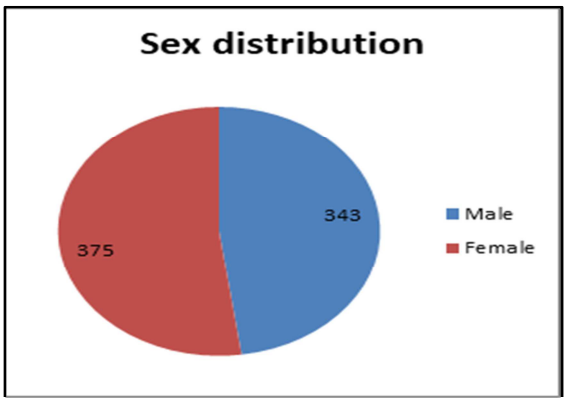
MATERIALS AND METHODS

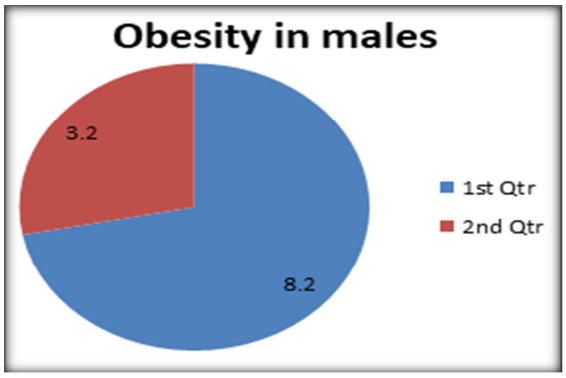
We have conducted this study during the year 2016 and 2017. 798 subjects were included in the study. Males were 343 Females were 375. The age group is more than 40years.

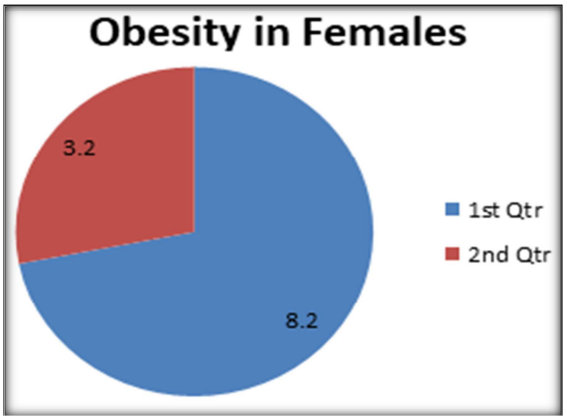
Detected medical history was obtained including dietary habits, exercise, addictions like smoking and alcoholism after complete clinical examination, anthropometric measurements like height and weight were taken by trained para medical person. And blood pressure was recorded on 2 separate

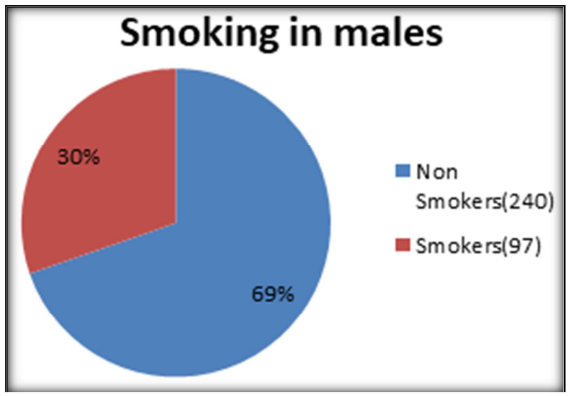
occasions. BMI was calculated based on weight (kg) and height (m) of the patient using the formula weight /height2. According to WHO guideline the patients were classified as normal BMI < 25 Kg/m2; over weight 25.0 – 29.9Kg/M2; class I obese BMI 30.0 – 34.9 Kg/M2; class II obese BMI 35.0 – 34.9 Kg/m2; class II obese BMI 35.0 – 39.9 kg/m2; and class III obese is > 40 kg/m2.[13] The national cholesterol educational program expert panel suggested the criteria for metabolic syndrome 1) Blood pressure more than 135/85mm of Hg 2) Serum triglycerides more than 150mg/dl 3) HDL cholesterol less than 40mg/dl for males and 50mg/dl for females 4) fasting blood glucose more than 110mg/dl 5) BMI more than 30kg/m2 for obesity. Metabolic syndrome is considered where there are 3 or more criteria is present.[15]

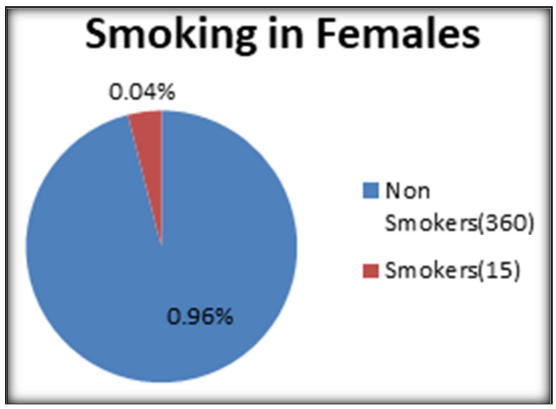
Blood sample called and send for CRP, FBS, LDL cholesterol, SERUM triglycerides and uric acid.

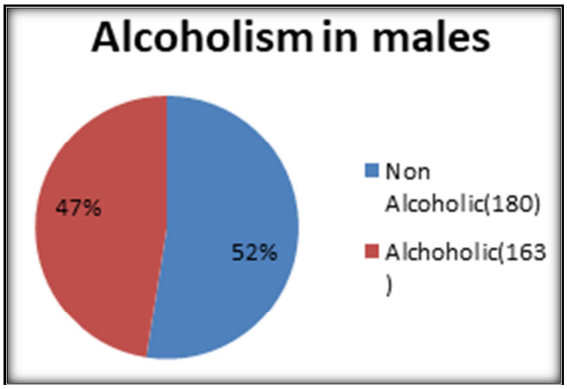


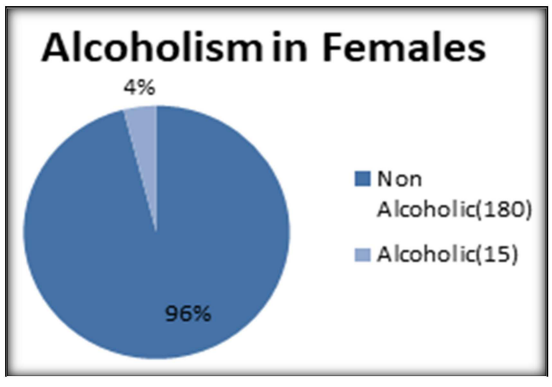












RESULTS

In our Study we have examined 798 subjects. Males were 343. Females were 375. Out of these 798 obesity seen in 2.6% subjects in males it 10 persons. In females it is seen in 7 persons overweight is seen

in 17.5% males, 16.9% in females. The average age is 56.7 in males and 53.5 in females. The average blood pressure is in normal range. Lipid profile and fasting blood glucose are slightly elevated.
CRP is elevated in class II and class III obese patients in class I it is normal.

Serum Triglycerides (Mg/dl)	142 ± 13.5
Serum HDL Cholesterol (Mg/dl)	41.5 ± 4.3
Serum LDL Cholesterol(Mg/dl)	139 ± 4.5
Fasting Blood Glucose(Mg/dl)	118 ± 13.5
CRP(Mg/dl)	7.5 ± 2.9

DISCUSSION

Obesity, overweight, increased CRP level are considered as important risk factor for cardiovascular disease more than 10mg/dl of CRP is considered as risk factor for myocardial infarction, ischemic stroke, peripheral arterial disease increased CRP release interlenkin-6 observed in patients with angina. In our study CRP in strongly associated with obesity smoking is known to influence CRP level. Increased CRP level are seen in metabolic syndrome the study conducted by Froehlich et al shows that there is correlation between CRP & BMI, triglycerides, glucose uric acid and negative correction with HDL cholesterol it is also observed that CRP level are increased in metabolic syndrome with obese patients than non-obese patients part of interlenkin-6 is estimated to be released by adipose tissue and stimulates the production of acute phase protein in the liver this may be cause of increased CRP levels in obesity

CONCLUSION

Increased C-reactive protein levels are associated with high BMI in metabolic syndrome. C - reactive protein more than 10mg/dl may be due to inflammation in obese subject so there is need to evaluate the subjects with high BMI especially with metabolic syndrome.

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How to cite this article: Srinivas S, Krishna CRPS. A Study on C-Reactive Protein in Metabolic Syndrome. Ann. Int. Med. Den. Res. 2018; 4(6):ME16-ME18.

Source of Support: Nil, **Conflict of Interest:** None declared