INTRODUCTION:
Diabetes mellitus is the most common metabolic disorder. The incidence of cardiovascular diseases in patients with Type 2 Diabetes Mellitus is increasing nowadays. Assessment of cardiovascular risk in patients with Type 2 Diabetes Mellitus is the primary concern in managing these patients.

Microalbuminuria is a known important risk factor for Kidney disease. Recent studies have highlighted Micro albuminuria as an independent marker for endothelial dysfunction and cardiovascular diseases. Microalbuminuria is a consequence of vascular diseases. Albumin leakage into urine is a reflection of widespread vascular damage. Microalbuminuria is defined as the excretion of 30-300 μg of albumin per mg Creatinine excreted in a spot urine sample or 30-300mg of Albumin excreted per day in a 24 hours urine sample. Microalbuminuria is highly prevalent in patients with Diabetes Mellitus, its prevalence ranging from 10 to 40 %. In India, the prevalence of Microalbuminuria varies from 19.7 to 28.5 % in patients with Type 2 Diabetes Mellitus.

A duration of more than 6 years may have existed before the patients are diagnosed with Type 2 Diabetes mellitus, due to its insidious onset. As a result, patients often present with Microalbuminuria at the time of diagnosis. Microalbuminuria leads to increased risk of Cardiovascular diseases and Death.

Studies have reported that the risk factors for Cardiovascular disease such as the fasting Lipid profile varied significantly between type 2 Diabetes Mellitus patients with and without Microalbuminuria. This study is to evaluate the prevalence of Microalbuminuria in recently diagnosed cases of Type 2 Diabetes Mellitus and to study the correlation of the parameters of fasting Lipid profile and Microalbuminuric excretion in these patients, so that Microalbuminuria can be used as an independent marker for early prediction of Cardiovascular complications and can be used as a screening procedure in all patients diagnosed with type 2 Diabetes mellitus.

REVIEW OF LITERATURE:
Microalbuminuria is defined as excretion of low levels of albumin in urine about 30 to 300 mg/dl. The prevalence of Microalbuminuria varies from 10 to 40% [7,8,10]. It is urinary excretion of albumin that is persistently increased above normal levels, but below the sensitivity of conventional semi-quantitative test strips [9].

Microalbuminuria has been proposed as a strong and independent indicator of increased cardiovascular risk in subjects with and without diabetes. Endothelial dysfunction and chronic low-grade, subclinical inflammation has been implicated as a common pathophysiologic process in the association between microalbuminuria and cardiovascular disease [10].

Physiologically, the glomerular filter forms a barrier to prevent macromolecules from reaching the urinary space. The proximal tubule has an effective albumin reabsorption system that metabolizes albumin, so that urine contains no or only small quantities of albumin. Increase in albumin excretion reflects the loss of filtration power of glomerulus due to damage of Glomerular endothelial cells (podocytes) [6,7].

The incidence of subclinical atherosclerosis is increased in type 2 diabetic patients with microalbuminuria, Insulin resistance and hyperglycemia [11,12].

The pathophysiological process of atherosclerosis is mainly due to endothelial dysfunction. Impaired endothelium leads to increased susceptibility to thrombus formation, increased adhesion of platelets and increased transmigration of leukocytes. The normal blood flow maintenance is by prostacyclin and nitric oxide which inhibits platelet activation. People with DM have reduced prostacyclin and NO, due to a chronic impairment of endothelial NO synthase activity. This also has been proposed as a mechanism of Atheroma
formulation in patients with type 2 Diabetes mellitus.

The endothelial function in type 2 Diabetes mellitus patients has a negative correlation with microalbuminuria. The leakage of albumin through Glomerulus reflects a widespread atherosclerosis-mediated capillary vascular pathology. Angiographic studies proved that the extent of endothelial dysfunction correlates with the degree of albumin excretion. Microalbuminuria is an index of vascular damage.

Urinary excretion of large amounts of proteins may lead to increased serum levels of total cholesterol and LDL-cholesterol. The number of patients attending Cardiology outpatient setting is increasing, indicating that cardiovascular diseases in Type 2 Diabetes patients are common and possibly underes timated. Microalbuminuria can be used as a prognostic factor for morbidity and mortality due to Cardiovascular diseases in Type 2 Diabetes patients. There is evidence that reduction of albuminuria leads to improvement in the risk profiles of patients with type 2 Diabetes Mellitus.

Lipid profile and Atherogenic index have been shown to be significant predictors for metabolic disturbances.

Atherogenic index was calculated by the formula = \log \left( \frac{\text{TG}}{\text{HDL-C}} \right).

Friedewald formula is used for calculating LDL and VLDL.

VLDL = TG/5, LDL = Total Cholesterol-(VLDL+HDL).

Atherogenic Index has been found to be an independent determinant of chronic subclinical inflammation in patients with type 2 diabetes mellitus. The Atherogenic index of plasma has been positively correlated with cholesterol, TG, LDL, VLDL and negatively correlated with HDL and the correlation is found to be statistically significant. Compared to conventional Lipid levels, ratios such as TG/HDL-C have a better statistical link with the prevalence and severity of Coronary Artery disease.

AIMS & OBJECTIVES:
1. To determine the prevalence of Microalbuminivria in newly diagnosed patients with Type 2 Diabetes Mellitus.
2. To compare the effectiveness of Microalbuminuria with the fasting Lipid profile in detecting Cardiovascular risk in these patients in terms of Atherogenic Index.

MATERIALS & METHODS:
The current study is a cross-sectional study and carried out for a period of two months. The study group includes 100 patients with Type 2 Diabetes Mellitus. The patients are selected from those attending Diabetic Out Patient Department. Informed written consent was obtained from all the 100 participants.

INCLUSION CRITERIA:
Patients with recently diagnosed Type 2 Diabetes Mellitus (within 2 years of diagnosis) and age less than 40 years.

EXCLUSION CRITERIA:
Patients presenting with:
1. Urinary tract infection
2. Macroalbuminuria
3. Renal failure
4. Heart failure of any stage.

METHODOLOGY:
BMI (Body Mass Index) is calculated and it is expressed as Kg/m².

Fasting and postprandial blood samples and early morning urine samples are collected from the selected patients.

In the fasting blood sample, plasma Glucose, serum Lipid profile and serum Creatinine are measured. In the post prandial blood sample, plasma glucose is measured. In the early morning collected urine sample, Microalbumin is measured. The parameters are determined using semi-auto analyzer.

Plasma glucose is measured by Glucose oxidase - Peroxidase Enzymatic method, Serum Creatinine by Alkaline Picrate method, serum Total Cholesterol by Cholesterol Oxidase-Enzymatic method, serum Triglycerides by Enzymatic Colorimetric method, serum HDL - cholesterol by Phosphotungstate/magnesium precipitation method and urine Microalbumin by Turbidimetric Immunoassay method. LDL is calculated by the Friedewald formula. VLDL is calculated by the formula TG/5.

OBSERVATION & RESULTS:
The patients were divided into two groups: Group A, without Microalbuminuria and Group B, with Microalbuminuria. Atherogenic Indices were calculated by using the following equation log (Triglycerides / HDL cholesterol).

STATISTICAL ANALYSIS:
All values are presented as Mean ± Standard Deviation. The results were statistically analyzed by using student’s ‘t’ test and by Pearson’s correlation coefficient using Microsoft Excel Worksheet. ‘p’ Value <0.05 is considered as significant.

The study consisted of 100 patients out of which 54 patients had no Microalbuminuria and 46 patients had Microalbuminuria. The Prevalence of Microalbuminuria is 46% in newly diagnosed cases of diabetes Mellitus.

TABLE-1: Shows the Biochemical Characteristics of the study -
<table>
<thead>
<tr>
<th>S.No.</th>
<th>BMI</th>
<th>FBS</th>
<th>PPBS</th>
<th>T.CHOL</th>
<th>TGL</th>
<th>HDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>27.6±1.74</td>
<td>100.9±16.52</td>
<td>234±104.61</td>
<td>183.8±36.49</td>
<td>97.4±16.91</td>
<td>38.6±2.35</td>
</tr>
<tr>
<td>Group B</td>
<td>27.6±1.39</td>
<td>115.7±16.85</td>
<td>288.5±104.8</td>
<td>200.3±28.21</td>
<td>140.5±27.63</td>
<td>35.6±4.93</td>
</tr>
<tr>
<td>p value</td>
<td>&lt;0.5</td>
<td>&lt;0.001</td>
<td>&lt;0.005</td>
<td>&lt;0.05</td>
<td>&lt;0.001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Significant</td>
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</table>

TABLE-2:
<table>
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<th>S.No.</th>
<th>CREAT</th>
<th>A.I.</th>
<th>M.ALB.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>27.6±1.74</td>
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</tr>
<tr>
<td>p value</td>
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<td>Significant</td>
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</tr>
</tbody>
</table>

DISCUSSION:
The results show that BMI, FBS, PPBS, Total Cholesterol, TGL, Atherogenic Index, Creatinine and Urine Albumin to be higher in Group B compared to Group A patients and Serum HDL is found to be lower in Group B compared to Group A patients.

2 * GJRA - GLOBAL JOURNAL FOR RESEARCH ANALYSIS
Albinuria being a modifiable risk marker and studies of secondary prevention have shown that blood pressure-lowering drugs effectively reduce the albumin excretion rate, ACE inhibitors seem to be particularly effective. The current observation may lead to new therapeutic strategies in the prevention of CV disease. Albumin excretion levels may represent the primary marker for success of such therapies.

CONCLUSION:
Microalbuminuria can be used as an independent risk marker for early prediction of Cardiovascular complications and can be used as a screening procedure in all patients diagnosed with type 2 diabetes mellitus. Periodic screening for microalbuminuria could allow early identification of vascular disease and help stratify overall cardiovascular risk, especially in patients with risk factors such as Diabetes. A positive test for urinary albumin excretion could signify the need for an intensive multifactorial intervention strategy, including behavior modification and targeted pharmacotherapy, aimed at preventing further renal deterioration and improving the overall CVD risk factor profile.

In our study, the measurement of urinary albumin excretion is based on a single early morning urine sample. The urine albumin values of first void sample are close to the 24 hours urine protein values than spot urine as found in previous other studies. But, a 24 hour urine sample would have been preferable. This study is cross-sectional, and without control participants. So, new studies are needed in this topic rectifying these limitations.

SUGGESTIONS:
The American Diabetes Association recommends that patients with type 2 diabetes be tested for albuminuria at the time of initial diagnosis of Diabetes Mellitus and every year thereafter. Physicians should measure urinary albumin excretion in patients with type 2 Diabetes and Hypertension routinely and be aggressive in treating this modifiable risk factor.

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