**Table 1: The Clinical Main Vascular Complications in the all studied groups.**

|  |  |
| --- | --- |
| **Complications** | **Frequency (%)** |
| **Microvascular complications*** **Retinopathy**
* Non-proliferative
* Proliferative
* **Nephropathy**
* Yes
* No
* **Neuropathy**
* Yes
* Motor
* Sensory
* Sensorimotor
* Autonomic
* No neuropathy
 | **100 (100%)****70 (70%)**50 (71.4%)20 (28.6%)**63** (**63%)**37 (37 %)**82 (82%)**13 (15.9%)41 (50 %)38 (46.3%)28 (34.1%)**18 (18%)** |

Data was expressed in form of frequency (percentage)

**Table 2: Classification of studied DKD patients according to their eGFR and the degree of albuminuria**

|  |  |
| --- | --- |
| **Parameters** | **Frequency (%)** |
| **Stage of DKD** **I (≥ 90 ml/min/1.73 m2)****II (60-89** **ml/min/1.73 m2)****III (30-59** **ml/min/1.73 m2)****IV (15-29** **ml/min/1.73 m2)****V (< 15** **ml/min/1.73 m2)** | 33 (33%)16 (16%)47 (47%)4 (4%)0 (0%) |
| **Degree of albuminuria****A1: Normoalbuminuria (< 30mg/24hr)****A2: Microalbuminuria (30-300 mg/24hr)****A3: Macroalbuminuria (> 300 mg/24hr)** | 18 (18%)31 (31%)51 (51%) |

Stage of DKD (diabetic kidney disease) according to e GFR (ml/min/1.73 m2); Data was expressed in form of frequency (percentage)

**Table 3: The relationship between different stages of DKD and the** **degree of albuminuria**

|  |  |  |  |
| --- | --- | --- | --- |
| **Stage of DN (ml/min)** | **Degree Albuminuria (mg/24 hour)** | **Total number patients** | ***P* -value** |
| **Normoalbuminuria****(A1: < 30)** | **Microalbuminuria****(A2: 30-300)** | **Macroalbuminuria****(A3: > 300)** |
| **I (> 90)** | 13 (13%) | 16 (16%) | 4 (4%) | 33 (33%) | **0.001** |
| **II (60-89)** | 3 (3%) | 7 (7%) | 6 (6%) | 16 (16%) | 0.09 |
| **III (30-59)** | 2 (2%) | 8 (8%) | 37 (37%) | 47 (47%) | **0.02** |
| **IV (15-29)** | 0 | 0 | 4 (4%) | 4 (4%) | - |
| **V (<15)** | 0 | 0 | 0 | 0 | - |
| **Total**  | 18 (18%) | 31 (31%) | 51 (51%) | 100 (100%) | - |

DKD (diabetic kidney disease). Data was expressed in from of frequency (%) respecting to total patients count. P value was considered significant if < 0.05

**Table 4: The Clinical and laboratory Basics of studied patients according to degree of Albuminuria**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variables** | **Degree Albuminuria (mg/g cr)** | ***P*\*- value** | ***P1-* value** | ***P2-* value** | ***P3-* value** |
| **Normoalbuminuria****(A1: < 30)****(No=18)** | **Microalbuminuria****(A2: 30-300)****(No=31)** | **Macroalbuminuria****(A3: > 300)****(No=51)** |
| **Age (years)** | 37.45 ± 3.24 | 39.61 ± 2.13 | 38.54 ± 3.45 | 0.71 | 0.09 | 0.34 | 0.47 |
| **Gender (%)**Male Female | 11 (61.1%)7 (38.9%) | 23 (25.8%)8 (74.2%) | 36 (70.6%)15 (29.4%) | **0.001** | **0.03** | **0.01** | **0.02** |
| **BMI (kg/m²)** | 24.09 ± 4.09 | 26.32 ± 5.01 | 26.91 ± 6.78 | **0.04** | **0.03** | **0.001** | 0.44 |
| **Duration (years)** | 4.44 ± 3.69 | 5.61± 3.33 | 8.15 ± 3.55 | **0.001** | 0.56 | **0.01** | **0.001** |
| **HbA1c (%)** | 7.34 ± 1.23 | 9.91 ± 1.03 | 10.78 ± 2.21 | **0.001** | **0.001** | **0.01** | **0.02** |
| **Adiponectin (μg/mL)** | 22988 ± 4109.35 | 16907.64 ±3436.23 | 12939.35 ± 2705.45 | **0.04** | **0.001** | **0.01** | **0.001** |

 Nominal date was expressed in form of frequency (%) and compared with Chi² test while continuous one was expressed in form of mean ± SD and compared with one-way ANOVA test. *P* value considered of statistical significant if < 0.05. HbA1c; glycosylated hemoglobin, SBP; systolic blood pressure, DBP; diastolic blood pressure, MAP; mean arterial pressure \*result of ANOVA test ; P1 compared patients with normoalbuminuria and those with microalbuminuria, P2 compared patients with normoalbuminuria and those with macroalbuminuria, P3 compared patients with macroalbuminuria and those with microalbuminuria

**Table 5: The relation of the Levels of Adiponectin among our studied patients with different Stages of diabetic kidney disease**

|  |  |
| --- | --- |
| **Stage of DKD (No= 100)****Mean ± SD** | ***P* -value** |
| **Stages** | **Stage I****(No=3)** | **Stage II****(No= 16)** | **Stage III****(No=33)** | **Stage IV****(No=33)** | **P1- value** | **P2-value** | **P3 -value** | **P4 -*****value*** | **P5-****value** | **P6-****value** |
| **ADPN****(μg/mL)** | 18908.33 ± 1235.98 | 15503.32 ± 2009.11 | 13782.98 ± 1983.03 | 6171.45 ± 983.24 | 0.09 | **0.04** | 0.02 | 0.78 | 0.14 | **0.03** |

DKD: diabetic kidney disease, ADPN:adiponectin, Data was expressed in form of mean ± SD and compared with one-way ANOVA test. P value considered of statistical significant if < 0.05 P\* indicated to ANOVA test; P\* value 0.001for each , p1 indicated comparison between grades I and II, P2 indicated comparison between grades I and III P3 indicated comparison between grades I and IV, P4 indicated comparison between grades II and III, P5 indicated comparison between grade II and IV, P6 indicated comparison between grade III and IV

**Table 6: The relation between of Microvascular complications with Adiponectin levels in studied diabetic Patients**

|  |  |  |  |
| --- | --- | --- | --- |
| **Microvascular complications** | **No** | **Adiponectin** **(μg/mL)****Mean± SD** | ***P*- value** |
| **Retinopathy** **-Non-proliferative retinopathy**  **- Proliferative retinopathy** | 5020 |  16518.23± 6553.13 15232.86 ± 7262.09 | 0.35 |
| **Neuropathy** **- Yes** **- No** | 8218 | 15811.65± 3513.2216791.11 ± 4213.09 | 0.35 |
| **Nephropathy** -**With proteinuria**  **-Without proteinuria**  | 6337 | 14601.69 ± 2221.4918322.59 ± 2100.13 | **0.001** |

Data was expressed in from mean ± SD. Student t test was used to compare between both groups and P value was considered statistically significant if < 0.05.

**Table 7: The Correlations of Adiponectin with different parameters in the studied patients.**

|  |  |
| --- | --- |
| **Parameters** | **Adiponectin** |
| **r =** | **P-value** |
| Age  | -0.17 | 0.52 |
| BMI | -0.02 | 0.45 |
| Duration of DM | -0.21 | **0.11** |
| HbG Level | -0.14 | 0.16 |
| Blood glucose level | -0.11 | 0.21 |
| HbA1c level | -0.04 | **0.65** |
| Serum creatinine | -0.11 | 0.33 |
| Creatinine clearance  | 0.31 | **0.001** |
| Albuminuria  | -0.44 | **0.001** |
| LDL | -0.55 | **0.04** |
| TG | -0.61 | **0.01** |
| HDL | 0.21 | 0.32 |
| TC | 0.21 | 0.55 |

TC: Cholesterol TG: triglycerides. P value indicated the significance of correlation where correlation was significant if P value <0.05 while r value indicated to strength of correlation

**Table 8**: **Multivariate regression analysis for prediction of DKD with nephropathy**

|  |  |  |  |
| --- | --- | --- | --- |
| Variables  | Odd ratio (OR) | 95% CI | **P value** |
| **Age****Sex****Duration of DM****Body mass index****Adiponectin**  | 0.980.342.331.41.09 | 1.09- 2.332.34- 3.072.45- 4.786.78- 7.6811.45-13.08 | 0.070.11**0.04**0.45**0.06** |

 P was significant if <0.05. CI, confidence interval

**Table 9: Receiver-operating characteristic (ROC) analyses for Prediction of Microvascular complications in our studied patients.**

|  |  |
| --- | --- |
| **ROC curve** | **Adiponectin** |
| Area under the curve | 0.61 |
| Cut off point | < 22600 |
| *P* value  | 0.01 |
| Sensitivity  | 81% |
| Specificity  | 27% |
| Positive predictive value  | 86% |
| Negative predictive value  | 20% |