**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** | 50  20 | 16518.23± 6553.13  15232.86 ± 7262.09 | 0.35 |
| **Neuropathy**  **- Yes**  **- No** | 82  18 | 15811.65± 3513.22  16791.11 ± 4213.09 | 0.35 |
| **Nephropathy**  -**With proteinuria**  **-Without proteinuria** | 63  37 | 14601.69 ± 2221.49  18322.59 ± 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** | 0.98  0.34  2.33  1.4  1.09 | 1.09- 2.33  2.34- 3.07  2.45- 4.78  6.78- 7.68  11.45-13.08 | 0.07  0.11  **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% |