**Impact of Hypoglycemic Treatment Choice: Insulin or Oral Hypoglycemic Agents On The Long Term Diabetic Complications In Diabetic Nephropathy patients.**

**Jamal AL Wakeel MD 1, Durdana Hammad MD 1, Ali Al Harbi MD2**

1. Department of Medicine, Division of Nephrology King Khalid University-King Saud University, Riyadh, Saudi Arabia
2. Department of Medicine, Nephrology Unit, Security Forces Hospital, Riyadh, Saudi Arabia

**Abstract:**

**Background:** Diabetes Mellitus is a fast growing major health problem worldwide requiring attention. Diabetic patients are at high risk of. Premature vascular catastrophe and hard outcome like renal failure, stroke, myocardial infarction falls and mortality. There are most recent trends of treating non insulin dependent, diabetes Mellitus patients with short-intensive insulin therapy at its earliest to halt the development and progression of diabetic complications. United Kingdom Prospective Diabetes Study (UKPDS) and [Diabetes control and complications trial](http://en.wikipedia.org/wiki/Diabetes_control_and_complications_trial) (DCCT)are the landmarks with valuable clues. There are very few studies regarding whether type of treatment to achieve euglycemia by oral hypoglycemics or insulin therapy on the diabetic chronic complication in diabetic nephropathy patients.The present study was therefore undertaken.

**Aim:** To investigate the potential impact of treatment with oral HA or insulin on the development and progression of long term diabetic complications in proteinuric diabetic nephropathy patients.

**Method:** A single center retrospective study was performed on 508 proteinuric diabetic nephropathy patients in tertiary hospital in Riyadh, Saudi Arabia from January 1989 to December 2004. Data included demographics, comorbidities, body mass index, duration of diabetes, duration of follow up, family history of diabetes as well as the clinical and laboratory data; including serum creatinine fasting blood sugar glomerular filtration rate systolic blood pressure, diastolic blood pressure, macro vascular and micro vascular complications, age at diagnosis, age at first myocardial infarction, and age at neuropathy.

**Results:** Total 508 patients with 53.3% male and 46.7% female were included. 192 patients were on the oral hypoglycemic agents while 28 patients were on insulin therapy. The rest were on combine therapy of oral hypoglycemic agents and insulin. Comparing the baseline characteristic of the insulin treated group vs. oral hypoglycemic agents treated group. The age at enrollment was 55.1±16 vs. 65±12 years. The age at diagnosis was 42.4±15 vs. 51.3 ±11.7 years. Body mass index was 30.5±5.8 vs. 29.1±4.8. Duration of diabetes was 13.7±8 vs. 13.82±7years. Initial fasting blood sugar was 9.7±3.7 vs. 9.8±2.4 mmol/L. Initial serum cholesterol was 4.3±1.2 vs. 4.1±0.9 mmol/L. The initial serum creatinine was 109±95 vs. 94±71.2 µmol/L. The GFR at initial visit was 96.6± 56.5 vs. 85.3± 37.7 ml/min. Patients treated with insulin were at lower risk of having diabetic complications as compared to the patients treated with oral hypoglycemic agents. Following outcomes could attain a statistical significance: GFR at last visit was 69.1±56.5in insulin treated group vs. 55± 34 in oral hypoglycemic treated group (p=0.05) , SBP at last visit (p=0.0252), DBP at last visit (p=0.0108), Arrhythmias in 0% patients vs. 3.6% patients (p=0.0008), cataract (p=0.06), vitrous hemorrhage (p=0.03), Some other complications were angina in 25% vs36.5% (p=0.1787) ,proliferative retinopathy in 10.7% patients vs. 10.4% (p=0.9617), blindness 3.6% vs. 03.6 % patients (p=0.9238), neuropathy 21.4% patients vs. 27.6% patients (p=0.4610), stroke in14.3% vs. 14.1% patients (p=0.999). There was a greater cardiovascular risk reduction in insulin treated patients. There was better survival also in insulin treated patients as compared to those who were on oral hypoglycemic agents Table below.

**Table 1:** Showing outcome in insulin treated or OHA treated diabetic patients.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Choice of treatment: | GFR last | SBP last | DBP last | neuropathy | Cataract | Vitrous hemorrhage | MI | GFR<60 | Arrhythmias | Mortality |
| Insulin | 69.1±56.5 | 124.9±19 | 74.8±10 | 21.4% | 25% | 0% | 21.4% | 50 % | 0% | 7.1% |
| OHA | 55± 34 | 136±25 | 79.5±10 | 27.6% | 37% | 0.5% | 25% | 60.9% | 3.6% | 10.4% |
| pValue | 0.05 | 0.0252♥ | 0.0108♥ | 0.4610 | 0.06 | 0.03♥ | 0.78 | 0.047♥ | 0.0008♥ | 0.5365 |
| ♥ pValue is statistically significant | | | | | | | | | | |

**Conclusion:** Insulin therapy improves the outcome and reduces the incidence of long term diabetes complications in diabetic nephropathy patients. Further, it halts the progression of diabetic complications and improves the survival.

Insulin therapy may significantly alter the course of long term diabetic complications and decreases the morbidity and mortality in NIDDM patients with diabetic nephropathy in Saudi ethnicity