**Effect of Anti hyperglycemic Treatment Choice: Insulin or Oral Hypoglycemic Agents On The Risk Factors And renal Outcome In Type 2 Diabetic Patients.**

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**Abstract:**

**Background:** In the past decade physicians were reluctant to institute insulin therapy in NIDDM patients with reason that hyper-insulinism in non-diabetic persons increases atherosclerosis, blood pressure cardiovascular and renal disease, (Diabetic Care: 1999) however most recent studies have shown that treating non insulin dependent, diabetes Mellitus patients with short-intensive insulin therapy at its earliest halts 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 type of anti diabetic treatment by oral hypoglycemic or insulin therapy on the risk factors and Renal outcome in NIDDM patients. The present study was therefore undertaken.

**Aim:** To investigate the potential impact of treatment with Oral hypoglycemic agents or insulin on the risk factors and renal outcome in NIDDM patients.

**Method:** A single center retrospective study was performed on 1952 diabetic patients with 51% males and 49% females in tertiary hospital in Riyadh, Saudi Arabia from January 1989 to December 2004. Data included demographics, co morbidities, 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, Initial and last GFR, incidence of D.N., and mortality.

**Results:** Total 1952 patients were included. 951 on the oral hypoglycemic agents while 99 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 49.8±16 vs. 59.12±13 years. The age at diagnosis was 40.76±13.9 vs. 50.09 ±12.62 years. Body mass index was 30.2±5.3 vs. 29.1±4.6. Duration of diabetes was 9.36±8 vs. 9.12±7.7 years. Initial fasting blood sugar was 9.8±3.1 vs. 9.6±2.4 mmol/L. Initial serum cholesterol was 4.1±0.99 vs. 4.1±1 mmol/L. The initial serum creatinine was 77.2±56.4 vs. 73.3±34.3 µmol/L. The GFR at initial visit was 120.56±61.3 vs. 106.53±45.27 ml/min. Long term Insulin treatment had no adverse effect on risk factors and renal outcome, (Table bellow) rather insulin treated patients had better GFR at last visit (p=0.0023), SBP at last visit (p=0.03), DBP at last visit (p=0.004), doubling of serum creatinine was in 11.1% patients vs. 9% patients (p=0.5420). Dialysis was given to 7% patients vs. 21% patients (p=0.0660). At initial visit 21.1% vs. 23.8% patients were having GFR <60 ml/min while at last visit furthermore 10% patients in insulin group vs. 13% patients in oral hypoglycemic group were having GFR <60ml/min (p= 0.3497). Total 39.4% patients in insulin group while 50% patients in OH group were having uncontrolled systolic diastolic hypertension with significant advantage to insulin treated group p=0.0407. Incidence of cataract (p=0.05), and insulin treated patients were at lower risk of having diabetic nephropathy (15% vs. 18%). There was a greater cardiovascular risk reduction in insulin treated patients. Although it could not attain the statistical significance yet there was survival benefit in insulin treated patients as compared to those who were on oral hypoglycemic agents.

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Choice of treatment: | GFR last | SBP last | DBP last | Cholesterol last | FBS | D.N. | MI | Angina | Weight | Mortality |
| Insulin | 101.7±5.5 | 124.2±15 | 74.9±9.2 | 4.46±1.1 | 7±3.1 | 15% | 11.1% | 16.2% | 79.7±12 | 5% |
| OHA | 89.2±4.7 | 128.8±20.7 | 78.2±8.8 | 4.2±1.1 | 7.2±3.5 | 18% | 12.2% | 20.2% | 78.2±13 | 8% |
| pValue | 0.0023♥ | 0.03♥ | 0.004♥ | 0.12 | 0.5848 | 0.56 | 0.78 | 0.03♥ | 0.2715 | 0.2 |
| ♥ pValue is statistically significant | | | | | | | | | | |

**Conclusion:** Insulin therapy improves rather than adversely affect many of the risk factors and risk of Diabetic nephropathy further; it halts the progression of diabetic complications, and provides better survival.