Diabetes

336. Study of Efficacy and Tolerability of Acarbose in Type II DM

AM Somalwar, RV Bhagat, RG Salkar, VS Sahastra bhaje Government Medical College and Hospital, Nagpur.

Objective: To determine the efficacy, tolerability and safety of Acarbose in patient with type II diabetes inadequately controlled with conventional oral agents or insulin therapy.

Research design and Methods: Prospective non-randomized drug trial of 12 weeks duration. Trial included total 46 patients, among them 23 were on OHA, 11 on OHA + insulin and 12 on only insulin therapy. All patients received, in addition to previous treatment, Acarbose for 12 weeks in titration from 50 mg OD to 50 mg TDS. Efficacy was assessed by changes in HbA1c, fasting and 90 minute postprandial blood glucose level.

Results: The addition of Acarbose to the treatment of patients receiving OHA or insulin therapy but not controlled on it, resulted in statistically significant reduction in mean HbA1c from 8.20 ± 0.65 to 6.70 ± 0.67 (p = 0.000 HS), FBS from 174.04 ± 12.87 to 155.26 ± 10.33 (p=0.0000 HS), PPBS from 244.04 ± 40.14 to 185.39 ± 23.61 (p=0.000 HS).

Among side effects, GI symptoms were most common (nausea, flatulence, abdominal pain, diarrhea) and there were no significant hypoglycemic events or liver transaminase elevations.

Conclusion: Addition of Acarbose to patients with Type II Diabetes who were inadequately controlled with OHA or insulin resulted in beneficial effects on glycemic control especially postprandial hyperglycemia and is safe as well as generally well tolerated.

341. Prevalence of Diabetes Mellitus in The General Population

MA Kamili, G Ali, HS Wazir, IH Dar, W Qureishi Government Medical College, Srinagar.

To assess the prevalence of Diabetes Mellitus in Native Kashmiri population, 3128 adult subjects (> 40 years) comprising of 1576 urban and 1582 rural from the twin Districts of Anantnag and Srinagar were studied. The Sample selected on random basis was in form of cluster of 3 villages from each district (rural population) and in three Mohallas (Municipal locality) from each district in urban areas. A house-to-house survey was conducted. Fasting blood sugar was done in all subjects under survey after fixing a mutually convenient date, time and place. Diagnosis of Diabetes Mellitus was made as per the ADA criteria. A total of 117 diabetics were detected giving an overall prevalence of 3.74%. The overall prevalence of Diabetes Mellitus was slightly more in females (3.79%) as compared to males (3.72%). Urban females showed a higher prevalence of Diabetes Mellitus 5.26% compared to urban males 4.18%. Prevalence of Diabetes Mellitus was 4.4% in urban subjects and 3.02% in rural subjects. Associated factors like obesity, sedentary habits, family history of diabetes and dyslipidemia were recorded. Details will be provided and comparison with earlier published data drawn.

342. Role of Pranayam in Type 2 Diabetes Mellitus

PS Singh, RK Ganjoo
7, Air Force Hospital, Kanpur.

The present study was conducted in 20 patients of type 2 Diabetes Mellitus. It provides metabolic and clinical evidence of improvement in glycaemic control and autonomic function. Patient’s age ranged from 35 to 55 years and all were on antihyperglycaemic and dietary regimen. Their baseline fasting and postprandial blood glucose as well as glycosylated Hb were monitored along with autonomic function studies. These patients were given training in Pranayam for 35 minutes/day for 90 days under guidance. Pranayam consisted of Ujjai, Bhashrika, Omkar and Sudarshan kriya. After 3 months of Pranayam, the parameters were repeated.

The results indicate that there was significant decrease in fasting blood glucose levels from basal 190 ± 18 to 140 ± 16 mg% and postprandial level decreased from 280 ± 20 to 200 ± 18 mg%. Glycosylated Hb showed a decrease from 10 ± 0.30 to 7.80 ± 0.50 after Pranayam. Pulse rate, systolic and diastolic BP decreased significantly after Pranayam.

Findings suggest better glycaemic control and stable autonomic function in type 2 Diabetes Mellitus with regular Pranayam. However exact mechanism as to how Pranayam interact with somato-neuroendocrine mechanism affecting metabolic and autonomic function remains to be worked out.

345. Clinical Evaluation of Patients with Fibrocalcified Pancreatic Diabetes (FCPD): An Ongoing Study

S Pal, B Barman, S Kakati, B Doley
Assam Medical College, Dibrugarh.

Incidence of FCPD is not very less in this part of our country. So, clinical evaluation of FCPD patients is important in Diabetes Mellitus. Total 15 patients (10 males and 5 females) of fibrocalcified pancreatic diabetes was included who were diagnosed as diabetic and were having evidence of pancreatic calcification in PP abdomen and USG abdomen.

At presentation 12 (80%) cases had classical symptoms of diabetes mellitus, 11 (73.33%) weight loss, 5 (33.3%) pain abdomen. 5 (33.3%) were both smoker and alcoholic with Family history of DM in 4 (26.6%) cases. Average BMI was 18.03 kg/m2 with FBS and PPBS being 202.2 mg% and 334.9 mg% respectively. Fasting and Post-Frondial insulin was 14 and 33.7 micro IU/ml respectively. 4 patients had diabetic nephropathy and retinopathy with celluitis of leg in 1 case. Insulin requirements was high in all patients.

Commonly affected age group was between 28-56 yrs with male predominance. Most of the patients were under weight with an average BMI of 18.03 kg/m2. Complication of diabetes was seen in 4 patients. Serum insulin level was low in almost all the patients.
Camel Milk as an Adjunct to Insulin Therapy Improves Long-Term Glycemic Control and Reduction in Doses of Insulin in Patients with Type-1 Diabetes - A 1 Year Randomized Clinical Trial

KK Kaswan, RP Agrawal, R Beniwal, S Sharma, DK Kochar, FC Tuteja, SK Ghoriui, MS Sahani
SP Medical College, Bikaner

Objectives: In earlier studies we had observed that camel milk supplementation as an adjunct to insulin therapy reduces the insulin requirement in type 1 diabetic patients. The aim of the present study was to assess the long term efficacy and safety of camel milk in the treatment of type 1 diabetic patients.

Methods: In a 52 weeks, randomised clinical parallel group, single point study, 24 patients with type 1 diabetes were divided in to two groups with mean age (13 ± 7.5 vs 15 ± 9.4), BMI (12 ± 5.2 vs 12 ± 4.4) HbA1c (7.54 ± 1.38 vs 7.8 ± 1.38) and mean dose of insulin (3 ± 11 vs 32 ± 12). Group 1 (N=12) received usual care (diet, exercise and insulin) and group 2 (N=12) received 500 ml camel milk in addition to usual care for 1 year. Frequent blood sugar monitoring was done to maintain euglycemia by titrating the doses of insulin.

Results: Treatment with camel milk led to a sustained reduction from baseline HbA1c (7.8 ± 1.38 to 6 ± 0.96), which was significantly greater than that seen with control (p < 0.001). The glycemic improvement with camel milk 500 ml daily was accompanied by mean reduction in insulin dose (14.17 vs 2.84 without camel milk at week 52, p < 0.011) without an overall increase in the severe hypoglycemic event rate. The only adverse event associated with camel milk use was mild nausea for transient period in some patients.

Conclusion: Camel milk 500 ml as an adjunct to insulin therapy improves long term glycemic control and causes significant reduction in doses of insulin in type 1 diabetic patients, However, there was no change in anti insulin antibody titre.

Estimation of Plasma Fibrinogen in Diabetes Mellitus (Type II)

SD Kumbhalkar, MM Thakare, RG Salkar, HR Salkar
Govt. Medical College and Hospital, Nagpur.

Background: Fibrinogen is a plasma protein which is first factor in coagulation system. A state of hyperfibrinogenemia is found in diabetes patients. Fibrinogen is a independent risk factor for various vascular complications of diabetes mellitus (Type II).

Method: We estimated plasma fibrinogen in 60 Type II Diabetes Mellitus patients less than 60 years (Male 31, Female 29) and 40 age, sex and BMI matched controls and correlated plasma fibrinogen level with various other risk factors for vascular complications of DM Type II particularly glycemic control and urinary albumin excretion rate. Patients were examined and investigated like blood sugar level, plasma fibrinogen, glycosylated Hb, arterial albumin excretion rate etc. Plasma fibrinogen was done by semiquantitative method by modified Clauss’ method.

Results: Mean plasma fibrinogen in Type II DM patients was 401.58 ± 67.62 mg/dl and in controls it was 288 ± 64.19 mg/dl. This difference was significant statistically (p = 0.000). Plasma fibrinogen was significantly higher in relation with other risk factors like smoking (p = 0.000), Alcohol (p = 0.012), IHD (p = 0.0024), Hypertension (p = 0.0076), glycemic control (p = 0.0019). Duration of diabetes (p = 0.000) and arterial albumin excretion rate (p = 0.000) in diabetes patients. Multiple Logistic Regression Analysis shows that glycosylated Hb (p = 0.004, OR = 1.66, 95% CI = 1.017194) and arterial albumin excretion rate (p = 0.038, OR = 1.028, 95% CI = 1.00155) was independently associated with plasma fibrinogen level in DM patients.

These results were similar to various other similar studies like Anuja Jain et al (2001) and G Bruno et al (2002). But plasma fibrinogen was not correlated with age and lipid profile levels in our study.

Conclusion: Our data indicates that DM Type II is characterized by hyperfibrinogenemia and plasma fibrinogen level was independently associated with glycemic control and arterial albumin excretion rate.

Cutaneous Manifestations in Diabetes Mellitus

HS Thukral, JK Kalsy, DS Mahajan, AK Sidhu
Guru Nanak Dev Hospital, Govt. Medical College, Amritsar.

Two hundred and fifty patients in the age group of 30-60 years were evaluated and equally divided into two groups of 125 patients each. Group A contained 125 diabetics and group B contained 125 non-diabetics. Overnight fasting blood sugar and complete urine examination was done in all patients and special investigations were done wherever necessary.

Aim of the study was to assess the incidence of cutaneous manifestations in diabetic group and non-diabetic group separately. Diabetics had significant number of more skin manifestations as compared to non-diabetics. Statistically significant difference in the skin manifestations were seen in peripheral vascular diseases, polyneuropathy, xery, yellow skin etc. Other manifestations, which outnumbered the diabetics group were cutaneous candidiasis, dermatophytosis, diabetic dermopathy, generalised pruritis and cutaneous reactions to oral therapy.

Hence, skin is an important window for diabetes mellitus, which can be detected early and early intervention will prevent morbidity from this deadly disease. This study was conducted in Guru Nanak Dev Hospital of Amritsar jointly by Department of medicine and Department of skin.
Introduction: "Stress" hyperglycemia may be associated with increased mortality and poor recovery in diabetic and nondiabetic patients after stroke. This study was carried out to study correlation of admission blood glucose level and outcome of stroke in diabetic and non-diabetic stroke patients.

Aims and Objective: 1. To correlate admission blood glucose levels with outcome of stroke in terms of hospital mortality and functional recovery. 2. To correlate admission blood glucose levels with stroke type and stroke severity.

Material and Method: 151 CT scan proved patients: 51 diabetics (45 known cases and 6 newly detected) and 100 consecutive nondiabetic stroke patients admitted in Medicine wards were assessed clinically and were assigned on admission NIH (National Institute of Health) Score. On admission blood sugar (sample taken before IV by High Performance) was estimated in all patients by Folin-Wu method. Glycated Hb levels were performed by High Performance Liquid Chromatography (HPLC) in all known diabetics and patients with high blood sugar on admission. Based on HbA1c levels patients were categorised as newly detected diabetes on non-diabetics with stress hyperglycemia. NIH score at discharge was recorded to assess functional recovery during hospital stay. Patients were divided as Diabetics - Group I, subgrouped as IA - Diabetics with normoglycemia and IB - Diabetics with hyperglycemia, similarly Non-diabetics - Group II, sub grouped as IIA - Non diabetics with normoglycemia and IIB - Non diabetics with hyperglycemia (Stress hyperglycemia)

Data was tabulated and analysed using microsoft excel programme and strata software.

Observations:

<table>
<thead>
<tr>
<th>Group I</th>
<th>Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetic stroke = 51</td>
<td>Non-Diabetic stroke = 100</td>
</tr>
<tr>
<td>IA - Diabetic with normoglycemia ≤ 140 = 07</td>
<td>IIA - Non diabetics with normoglycemia ≤ 140 = 82</td>
</tr>
<tr>
<td>IB - Diabetics with hyperglycemia &gt; 140 = 44</td>
<td>IIB - Non diabetics with hyperglycemia (Stress hyperglycemia) &gt; 140 = 18</td>
</tr>
</tbody>
</table>

Table 1: Age distribution

<table>
<thead>
<tr>
<th>Age</th>
<th>I (Diabetic stroke) A (N=07)</th>
<th>B (N=44)</th>
<th>II (Non Diabetic Stroke) A (N=82)</th>
<th>B (N=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-49</td>
<td>—</td>
<td>06 (13%)</td>
<td>08 (10%)</td>
<td>01 (6%)</td>
</tr>
<tr>
<td>50-59</td>
<td>03 (43%)</td>
<td>05 (11%)</td>
<td>27 (33%)</td>
<td>07 (39%)</td>
</tr>
<tr>
<td>60-69</td>
<td>03 (43%)</td>
<td>26 (60%)</td>
<td>34 (42%)</td>
<td>04 (22%)</td>
</tr>
<tr>
<td>70-79</td>
<td>01 (14%)</td>
<td>06 (13%)</td>
<td>12 (14%)</td>
<td>06 (33%)</td>
</tr>
<tr>
<td>&gt; 80</td>
<td>—</td>
<td>01 (03%)</td>
<td>01 (01%)</td>
<td>—</td>
</tr>
</tbody>
</table>

Mean age 60.90±7.75, 62.14±14.12, 64.42±13.26, 59.13±15.30

Table 2: Sex distribution

<table>
<thead>
<tr>
<th></th>
<th>I (Diabetic Stroke) A (N=07)</th>
<th>B (N=44)</th>
<th>II (Non Diabetic Stroke) A (N=82)</th>
<th>B (N=18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>06 (86%)</td>
<td>35 (80%)</td>
<td>52 (63%)</td>
<td>10 (55%)</td>
</tr>
<tr>
<td>Female</td>
<td>01 (14%)</td>
<td>09 (20%)</td>
<td>30 (37%)</td>
<td>08 (45%)</td>
</tr>
</tbody>
</table>

Table 3: Stroke type

<table>
<thead>
<tr>
<th></th>
<th>I (Diabetic Stroke) A (N=07)</th>
<th>B (N=44)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infarction</td>
<td>06 (85.71%)</td>
<td>31 (71.4%)</td>
<td>0.04</td>
</tr>
<tr>
<td>H’rrage</td>
<td>01 (14.29%)</td>
<td>13 (28.6%)</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Table 3: Stroke type (contd.)

<table>
<thead>
<tr>
<th></th>
<th>II (Non Diabetic Stroke) A (N=82)</th>
<th>B (N=18)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>58 (70.7%)</td>
<td>09 (50%)</td>
<td>&lt; 0.05</td>
<td></td>
</tr>
<tr>
<td>24 (29.3%)</td>
<td>09 (50%)</td>
<td>&lt; 0.05</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions: 1. Stress hyperglycemia was more common in younger age group in non-diabetic stroke. 2. Stress hyperglycemia was more common in non-diabetic females and diabetic males. 3. Hemorrhagic stroke was more commonly seen in both diabetics and non-diabetics with higher blood sugar levels on admission. 4. Patients in both groups with hyperglycemia on admission had severe stroke compared with normoglycemics. 5. Mortality was high in Diabetics (correlating with poor glycemic control) as well as in non-diabetics with hyperglycemia on admission. High admission blood glucose levels didn’t have statistically significant impact on early functional recovery.

A Study Comparing Serum Lp(a) Levels in Type 2 Diabetic Versus Non-Diabetic Patients with ST-Elevation Myocardial Infarction

K Babu, VH Naik, SM Shetty, K Suresh
Government Medical College, Mysore.

Background: Serum lipoprotein (a) is an emerging risk factor for coronary artery disease and a marker of accelerated atherosclerosis, especially in diabetes mellitus with macrovascular disease.

Study Objectives: To compare the levels of serum Lp (a) in type 2 diabetic patients presenting with ST Elevation MI with non-diabetic patients suffering from the same.

Material and Methods: Thirty type 2 diabetic STEMI patients and thirty non-diabetic STEMI patients, admitted consecutively to Coronary ICU were selected. Serum Lp (a) was tested within 24 hours of onset of chest pain, using Lipoprotein Electrophoresis technique (EDC Helena Biosciences UK).

Conclusions: Serum Lp (a) levels are increased in all STEMI patients (53.3%). Type 2 diabetic patients had a mean serum Lp (1) 50.22 ± 20.85 mg/dL; whereas non-diabetic patients had 27.42 ± 14.64 mg/dL. 70% diabetic patients (n=21) had Lp(a) > 30 mg/dL; compared to 37% (n=11) in non-diabetic patients.

Results: Serum Lp (a) is significantly increased in type 2 diabetic patients (P < 0.005) with STEMI compared to non-diabetic STEMI patients.

Comparative Study of Fasting and Post-Prandial Insulin C-Peptide, Blood Sugar Level Among Asthmatics and Healthy individuals

M Sabir, SK Kochar, V Sharma, B Sharma, A Garg
SP Medical College, Bikaner.

Aims and Objectives: To evaluate status of glucose metabolism in bronchial asthma and prevalence of impaired fasting glucose, impaired glucose tolerance and type 2 diabetes in diagnosed case of bronchial asthma.
Material and Methods: Fifty five cases of bronchial asthma (new and old) attending asthma clinic, SP Medical College, Bikaner were subjected to detailed clinical history, examination, routine investigation, spirometric evaluation with bronchiolytic test, fasting and post prandial levels of blood sugar, insulin, and C-peptide.

Results: Mean fasting and post prandial blood sugar levels were significantly lower in asthmatics in comparison to control but the fasting and post prandial level of insulin and C-peptide were significantly higher amongst asthmatics than control.

Conclusion: There are evidences to support our observation that glycemic control is towards hypoglycemia in asthmatic patients and blood sugar level decreases even more with severity of bronchial asthma and co-existence of bronchial asthma and type 2 diabetes is significantly less.

*370. Fear of Hypoglycaemia Among Type 1 and Type 2 Diabetic Patients*

R Shobaba, PR Rao, M Margeret, V Vijay, A Ramachandran
Diabetes Research Centre and MV Hospital for Diabetes, Chennai.

Aim: (a) To evaluate the fear of hypoglycaemia (FOH) among Type 1 and Type 2 diabetic subjects and (b) to explore the relationship between FOH with different variables.

Methods: A cohort of 153 subjects (72 Type 1, 44 Type 2 on OHA and 37 Type 2 on OHA + insulin participated in the study. The Hypoglycaemic Fear Survey (HFS) developed by Cox et al, was administered individually.

Results: FOH was significantly higher in Type 1 versus Type 2 as well as Type 2 on OHA versus Type 2 on OHA + insulin. Type 1 patients and Type 2 patients. Type 2 patients on OHA and insulin differ significantly in their behaviour to avoid hypoglycaemia. FOH was positively correlated with behaviour and worry subscale and negatively with HbA1c and duration of diabetes and insulin treatment. The relationship between educational level and FOH is positive and significant.

Conclusions: The results show that, Type 1 patients experience more FOH than Type 2 patients on OHA and Type 2 patients on OHA and insulin. Patients with higher educational level (graduation and above) experience more FOH than patients who have lower educational level.

371. Microalbuminuria in Diabetes Mellitus and Its Prognostic Significance

SR Pattnaik, BK Barik, AK Panigrahi, P Das, B Pradhan
VSS Medical College, Burla.

Aim of the Study: Microalbuminuria is well established as the earliest detectable marker of nephropathy in Diabetes. Persistant microalbuminuria leads to nephropathy, cardiovascular changes and other complications. The present study was undertaken to correlate microalbuminuria in both types of Diabetes with complications.

Methodology: One hundred cases of DM were studied during the period January 2003 to December 2003. Urine samples of all cases were subjected to boiling test for detection of Albumin (Macroalbuminuria). Negative samples were subjected to microl test for microalbuminuria. Cases having definite previous history of Renal, Thyroid and Hepatic diseases and Nephrotoxic drugs exposure were excluded from the study. All cases were subjected to detailed history, clinical and laboratory examination.

Observation: In the present study out of 36 cases of Type 1 DM, 5 had microalbuminuria (13.8%) and out of 64 cases of type - 2 DM, 11 cases had microalbuminuria (17.1%). In both groups there was male preponderance (Type-1, 17.3 : 7.6%; Type-2 21.5 : 12.5%). The 24 hour protein excretion was 149 ± 56.5 mg% in microalbuminuria cases. The mean Systolic Blood Pressure was 145 ± 19.95 mm of Hg in micral positive cases as compared to 126 ± 22.83 mm of Hg in negative cases. The mean Blood Pressure was 105.2 ± 13.5 mm of Hg in micral positive groups as compared to 91.3 ± 12.63 mm of Hg in control group. The FBS and 2 hr PGBS was higher in micral positive groups. The creatinine clearance was 147 ± 12.9 ml/min in microal group as compared to 126 ± 13.10 ml/min in negative groups indicating a significant increase in GFR in microalbuminuria cases. The serum cholesterol was high i.e. 202.3 ± 34.45 mg% in microalbuminuria cases indicating association of dyslipidemia specially in Type-2 DM. Peripheral neuropathy, retinopathy and cardiovascular diseases were more in microalbuminuria cases. Kidney size by USG was larger in patient with microalbuminuria < 100 mg/24 hr suggesting renal hypertrophy is an early feature of diabetic renal diseases and GFR was more in these patient. Renal Biopsy showed basement membrane thickening in 11 cases and mesangial cell proliferation in 9 cases.

Conclusion: In the present study microalbuminuria was correlated with different complications Irrespective of the type of DM the systolic, diastolic and mean blood pressure was high. Neupropathy, retinopathy and cardiovascular complications were more in microalbuminuria cases and directly correlated with the duration of diseases. Renal hypertrophy was an early feature of nephropathy. Renal histopathology was found to have a direct correlation with duration of disease and severity of microalbuminuria.

375. Prevalence of Association of Liver Function Derangement in Type 2 DM

Suparna Pal, J Mukhopadhay, A Chowdhury, S Ray, A Sinha, D Giri
SSKM Hospital and IPGME and R, Kolkata.

Background: Spectrum of liver disease ranging from innocuous enzyme elevation to progressive chronic liver disease has been described in association with Type-2 DM of which Non-Alcoholic Fatty Liver Disease (NAFLD) has been highlighted to be pathogenetically related to insulin resistance and diabetes.

Objective: To delineate the status of non viral liver disease in Type-2 DM patient.

Study Design and Method: Type 2 DM patients presenting for treatment at Cardio-Diabetic Clinic of Dept. of Medicine, IPGME and R were enrolled.

Inclusion criteria : i) Type 2 DM as per ADA criteria, ii) Viral marker for HBV and HCV was negative, iii) Non alcoholic, iv) No h/o chronic use of drugs that causes liver function alteration.

Patients were investigated for glycemic status, co-morbid illness, liver function test, USG of abdomen, liver biopsy (patients who had either abnormal LFT or fatty change in USG).

Results: A total of 144 patient with Type-2 DM evaluated - age range (34 to 65) sex (M:F = 2:1)

<table>
<thead>
<tr>
<th>No. of patients</th>
<th>Age range</th>
<th>LFT (fatty changes)</th>
<th>USG (fatty liver in USG)</th>
<th>Liver biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=144</td>
<td></td>
<td></td>
<td>Fatty Lv NASH CLD</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>34-44</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>85</td>
<td>45-55</td>
<td>15%</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>56-65</td>
<td>20%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Conclusion: Liver function abnormalities was found in 40% (n=57) of which isolated ALT elevation is the commonest. Nearly 100 patients (70%) showed fatty liver in USG. 22 patients having fatty changes in USG were biopsied of which NASH was in 40%
A Comparative Study to Evaluate Whether 3 Omega Fatty Acid with Bran Could be a Good Dietary Supplement for Lipid Disorders in Diabetics

AP Nambi, J Beryl Mohankumar, V Shymala, E Kannan
Sri Gokulam Hospital, Salem 636004.

Introduction: Lipid disorders are potentially atherogenic in NIDDM, as LDL particles are easily glycated. This is one of the main modifiable and preventable risk factors of CHD, the others being diabetes itself and hypertension. The treatment for the lipid disorder whether it is for primary prevention or for secondary prevention with whatever be the accompanying risk factor medical nutrition therapy is regarded as the first line management.

Objective: Therefore the main objective of this study was to determine the extent to which omega - 3 fatty acid from fish oil and dietary fibre from bran would help to modify the serum lipid profile and prevent its atherogenicity.

Material and Methods: NIDDM with dyslipidemia, of either sex on 1800 Kcal per day diabetic diet on hypoglycemic drugs, but no lipid lowering drugs. Their socio economic status, anthropometry, biochemical profile were assessed.

Experimental Design: 30 patients, divided into 3 groups of 10 each, taking case to distribute them equally, based on sex, income level and food habits.

Group I - Control; Group II - Experimental I fish oil + bran;
Group III - Experimental II fish oil

The fish oil and bran (5 ml and 25 g) and only fish oil (5 ml) were incorporated into chappathis and were taken for dinner, along with all other foods used regularly in the prescribed diet. The control group were given plain chappathis. The feeding trial was carried out for a period of thirty days. All investigations both clinical and biochemical were carried out before and after the feeding trial. This study was done at Sri Gokulam Hospital, Salem.

Results: The experimental group I that was given fish oil and bran showed a significant decrease in serum cholesterol, LDL, TG and VLDL levels, while there was an increase in HDL. Also there was a decrease in Post prandial blood glucose levels and HbA1C levels.

Discussion: Continued use of fish oil omega - 3 fatty acid and bran are beneficial for NIDDM. Omega - 3 fatty acid has host of beneficial effects in preventing CHD. The lipid disorder in NIDDM can be altered both quantitatively and qualitatively. As there are dietary supplements, it would prove to be cost-effective in the treatment of this lifelong metabolic disorder.

Conclusion: As diabetics are more vulnerable for dyslipidemia, the patients can be encouraged to take steps to postpone the consequent lipid changes.

Recommendation: Diabetologists and Dietitians may take care to see if their NIDDM patients have a sufficient amount of omega - 3 fatty acid and bran in their daily diet.

Assessment of Cardiac Autonomic Neuropathy and Its Correlation with Polyneuropathy in Type 2 Diabetes Mellitus

A Mishra, R Shukla, US Pandey, NS Verma, D Kumar
King George Medical University, Lucknow.

Aims and Objective: Diabetes being a multi-system disorder affects various organs including nerves. The involvement of autonomic nervous system is common in diabetes. Cardiac dysautonomia in diabetes is often quite disabling and life threatening. In majority of diabetics peripheral nerve dysfunction coexists with cardiac autonomic dysfunction but their exact correlation is not known. Our aim was the assessment of cardiac autonomic neuropathy and polyneuropathy in type-2 diabetics and finding the correlation between them.

Material and Methods: 30 Type 2 diabetic subjects between 40-60 years (with sex distribution of 20 males and 10 females) were included in the study and were assessed for cardiac dysautonomia by using 5 tests based on cardiovascular reflexes (Expiratory/Inspiration Ratio, Valsalva Ratio, 30:15 Ratio, Hand Grip Test and Postural Hypotension Test. Nerve dysfunction was assessed by 3 sensory tests (Vibration Test, 10 g Semmes Weinstein Monofilament examination and Superficial Pain Sensation Test) and deep tendon reflexes. The results were compared against the standard of Nerve Conduction Studies.

Results and Conclusion: 1. The E/I Ratio detected maximum number of cardiac dysautonomia (56.7%) followed by Valsalva Test (36.7%) (p < 0.01). 2. Vibration test detected maximum number of polyneuropathy (50%) followed by 10 g Semmes Weinstein Monofilament Test (36.6%) (p < 0.01). 3. The frequency of polyneuropathy was found to be higher (p < 0.01) in diabetics with cardiac dysautonomia than those without it. 4. The abnormalities in autonomic and peripheral dysfunction correlated well with abnormal nerve conduction studies. 5. Cardiac autonomic an polyneuropathy were independently associated with diabetes duration.

Offsprings of Type-2 Diabetes Mellitus Patients and Tumour Necrosis Factor Alpha Levels

CG Agrawal, RC Ahuja, AK Vaish, S Mehrotra, K Agrawal, R Bharath
King George Medical University, Lucknow.

Aim and Objective: Type 2 diabetes mellitus has become one of the world’s most important public health problems. Tumour Necrosis Factor-alpha (TNF-α) is considered to be involved in the insulin resistance of type-2 diabetes mellitus. The offspring of patients with type-2 diabetes mellitus are at increased risk of developing diabetes and several metabolic abnormalities, but the underlying defects responsible are not known. We studied serum TNF-α levels in healthy non-diabetic offspring of type-2 diabetes parents, and the relationship between TNF-α levels and variables associated with Insulin Resistance and Diabetes.

Material and Methods: 37 healthy non-diabetic offsprings of type-2 diabetic parents were taken as cases and 37 healthy offsprings of non-diabetic parents were taken as controls. Both the cases and controls were reclassified as obese and non-obese depending on Body Mass Index and Waist Hip Ratio. The parameters compared among cases and controls were level of insulin resistance as assessed by HOMA_{IR} method and TNF-α levels done by immuno enzymometric assay.

Results: 1. TNF-α levels were significantly elevated (212.114 ± 234.980 pg/ml) (Range 15.115-816.546) among cases than among controls (44.26 ± 23.03) (Range 8.261-155.306) (p < 0.001). 2. TNF-α levels were also elevated among obese cases than among non-obese cases. 3. TNF-α levels have a significant positive correlation with the marker of Insulin Resistance as assessed by HOMA_{IR} method.

Conclusion: Previous studies have shown that serum TNF-α levels are significantly increased in obese Type-2 diabetes mellitus patients, and has positive correlation with worsening of Glycemic Control and development of Diabetic Nephropathy and Retinopathy. Our study has proved that TNF-α levels in the
healthy obese offspring of diabetic patients may be a marker of Insulin Resistance and Predictor of future occurrence of diabetes.

383. **Double Blind Placed Controlled Trial of An Ayurvedic Formulation Amree Plus in Patients with Type 2 Diabetes Mellitus**

*V Kumari, K Rastogi, V Singh, D Jain, NK Vikram, RM Pandey, R Sharma, R Guleria, AK Sharma, A Misra*

All India Institute of Medical Sciences, Aimal Pharmaceuticals (India) Limited, New Delhi.

Background and Objective: The available oral hypoglycemic agents have adverse effects which may sometimes be life threatening. Therefore the alternative system of medicine is being researched to investigate new hypoglycemic drugs. This study was aimed to evaluated the anti-hyperglycemic effect of an ayurvedic formulation Amree Plus in Type 2 Diabetes Mellitus Patients.

Methodology: It was a double-blind randomized placebo-controlled trial of the 16 weeks duration. At the completion of the trial, patients (n=100, males=55, females=45) were assessed for changes in glycaemic and lipid status from the baseline.

Results: A median percent change in fasting blood glucose level of -9%, post-prandial blood glucose of -6% and HbA1c of -1.8% in patients of ‘Amree Plus’, and a percent change of -3%, -5.5% and +0.6% respectively in placebo group was observed.

Conclusion: ‘Amree Plus’ showed promising anti-hyperglycemic activity and should be investigated further as an adjunctive therapy in patients with Type 2 Diabetes Mellitus.

384. **Magnitude of Dyslipidemia and Its Association with Micro and Macrovascular Complications in Type 2 Diabetes: A Hospital Based Study from Bikaner (North West India)**

*SK Sharma, M Pal, RP Agrawal, DK Kochar*

Bikaner

Aims: Type 2 diabetes is not only associated with hyperglycemia but also with disorders of lipid metabolism. The aim of this study was to investigate the association of dyslipidemia with micro and macrovascular complications of diabetes.

Methods: Population based cross sectional study includes 4067 diabetic patients, new and review, seen from Jan 99 to Dec 2000. Lipid profile was estimated by semi autoanalysers in every patient. Retinopathy was assessed by fundoscopy, nephropathy by microalbuminurea, CAD by ECG changes, PVD by Doppler study and neuropathy by clinical examinations. The association of dyslipidemia with micro and macrovascular complications was assessed by regression analysis.

Results: The prevalence of dyslipidemia in our diabetic population, raised serum cholesterol > 240 mg/dl was seen in 15%, raised serum triglycerides > 160 mg/dl was seen in 42.01%, raised LDL > 130 mg/dl in 45.26%, VLDL > 40 mg/dl in 24.09% and low levels of HDL-C < 40 mg/dl were seen in 52.27%. On regression analysis, CAD had strong correlation with raised VLDL (0.43), raised triglycerides (0.82), raised LDL (0.23) and low HDL (-0.18). Similar association was seen with PVD. Diabetic retinopathy had significant correlation with low HDL (-0.43) and nephropathy had significant correlation with raised LDL (0.37). Neuropathy did not have any significant correlation with lipid profile abnormalities.

Conclusion: Lipid profile abnormalities is very common in type 2 diabetes and it is having great influence on CAD and PVD. Hence, appropriate preventive and treatment strategies should be considered timely.

385. **Double-Blind Placebo-Controlled Clinical Trial of Herbal Compound Glucomap (MA-471) on Metabolic Profile in Type 2 Diabetic Patients**

*S Dixit, A Saxena, RM Pandey, SM Bhusan, R Guleria, NK Vikram, S Sinha, A Misra*

All India Institute of Medical Sciences and Research and Development Department, Maharshi Ayurveda Products Limited, New Delhi.

Background and Objective: Type 2 diabetes (T2DM) is widespread and growing problem in India. Drug therapy of T2DM may be limited by adverse drug reactions, requiring alternative therapies.

Objective of study was to examine efficacy of herbal compound glucomap (MA-471) on metabolic profile in T2DM patients.

Methodology: In this double-blind placebo controlled trial, 97 T2DM patients were enrolled with initial fasting blood glucose (FBG) < 200 mg/dl, post-prandial blood glucose (PPBG < 250 mg/dl and glycosylated haemoglobin (HbA1c) < 9% on stable dose of OHA for past 3 months and not on insulin therapy. MA-471 was compared with placebo for a period of 4 months, monitored by HbA1c, FBG, PPBG and lipid profile. Monthly clinical profile and FBG were recorded. Biochemical investigations, PPBG and lipid profile were estimated in the beginning and at the end of the study. HbA1c was estimated at 8 weeks intervals.

Results: Forty eight patients received MA-471 and 49 patients received placebo. MA-471 had preferential effect on hypertriglyceridemia, but also lowered total cholesterol and HbA1c levels, (Table).

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Group A = MA-471</th>
<th>Reduction after 4 months*</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c (%)</td>
<td>A 3.8% -24.3 to 23.07</td>
<td>B 1.2% -13.5 to 15.4</td>
</tr>
<tr>
<td>Total cholesterol (mg/dL)</td>
<td>A 5.0% -48.3 to 48.1</td>
<td>B -1.2% -84.04 to 55.4</td>
</tr>
<tr>
<td>Triglycerides (mg/dL)</td>
<td>A 12.3% -131.03 to 73.6</td>
<td>B 2.62% -72.2 to 51.4</td>
</tr>
</tbody>
</table>

*All comparisons were statistically NS (p > 0.05).

Conclusion: Interestingly, MA-471 showed preferential triglyceride lowering activity, but also had some antihyperglycemic potential. These data are required to be tested in a larger trial. No side effects were seen in patients receiving MA-471.

386. **Cross-Sectional Study Regarding Awareness Amongst Diabetics of The Various Facets of The Disease and Its Complications**

*Rashmi Bhardwaj, NP Singh, Ruchika Handa, A Wadhwa, A Makhiha, SK Agarwal*

Maulana Azad Medical College and Associated Lok Nayak Hospital, New Delhi.

Background: India has the world’s largest diabetic population and despite the increasing incidence of morbidities and mortalities associated with the disease, there is still inadequate awareness regarding the various facets of the disease amongst general public in India. Also not much work has been done focusing on the actual dimension of the problem. This study is meant to unravel this aspect of ‘evaluating disease awareness’.

Aims and Objectives: The study aims at evaluating the awareness amongst diabetics of the various secondary complications which can arise because of their primary disease
and the available treatments as well as the contrast in knowledge between patients attending government hospitals and those going to private clinics.

Methodology : Hundred patients (40-OPD LNH, 40 private clinics (PC), 20 diabetic clinics (DC) LNH) were evaluated through a preformed questionnaire and the results analysed using anova.

Results : The mean age of 100 patients of diabetes was 40 ± 10 years. Male female ratio was 1.2:1. About a quarter of them was illiterates and most belonging to low and middle socio-economic group. Type 2 disease ratio was approximately 0:5:1. Mean duration of diabetes in the 100 patients studied was 7 ± 2 years. While 100% of the patients knew what treatment they were on, only 10% of government patients has regular HbA1c monitoring. Awareness regarding symptoms of hypoglycemia (30% OPD, 80% PC, 40% DC) : foot care (20% OPD, 47.5% PC, 45% DC); day to day precautions (17.5% OPD, 25% PC, 5% DC); and associated complications and morbidities (25% OPD, 85% PC, 30% DC); was quite low. Knowledge about dietary restrictions (77% OPD, 100% PC, 90% DC) was good though figures regarding actual restrictions being followed and inclination towards lifestyle modification (21.6% OPD, 40% PC, 10% DC) were quite unsatisfactory. Most of the patients in the study (62.1% OPD, 50% PC, 80% DC) had low calorie intake.

Conclusion : The study concluded that awareness amongst diabetics and its complications was quite unsatisfactory and there were significant differences in the knowledge about the disease between private and government hospital patients giving considerable food for thought to the medical fraternity to make efforts to bridge this gap.

390. Correlation of Triglyceride (Both Fasting and Postprandial) with Carotid Intima-Medial Thickness and its Usefulness as Marker of Cardiac Risk Factor in Type 2 Diabetes and Effect of Treatment with Fenofibrate for 8 Weeks

A Sinha, J Mukhopadhyay, Supama Pal
SSKM Hospital and IPGME and R, Kolkata.

Background : Type 2 diabetes causes a characteristic dyslipidemia that also occurs in metabolic syndrome especially visceral obesity. The main abnormalities are abnormally raised Triglyceride and decreased cholesterol - a powerful predictor of cardiovascular risk factor. It has been found that lipid risk threshold is lower and interactions with other cardiovascular risk factors are more powerful in diabetic compared to general population. Carotid intima-medial thickness (both common and internal carotid) by B mode USG is an important non invasive modality for the diagnosis of early atherosclerosis.

Objective : Objective of our study was to determine the following factors:

1. Determine the relationship between fasting and postprandial (2 hrs) Triglyceride level and carotid intima medical thickness.

2. Effect of treatment with Fenofibrate for 8 weeks on existing raised triglyceride level and carotid intima-medical thickness in diabetes patients with raised triglyceride level (both fasting and post pandrial).

Study design : Study is carried out on the patients attending Cardiodiabetic Clinic and both inpatients and out patients of Department of Medicine, SSKM Hospital, Kolkata. Type 2 diabetic patients with either or both ECG or echo positive for cardiac involvement (Stress ECG, ST-T changes and QT, dispersion, Echocardiography. (LV mass > 125 g/m² in men and 105 g/m² in women). Type 2 diabetes patients (diagnosed by ADA criteria) both old and newly diagnosed with good glycemic control. Patients were undergone following investigations.

1. Fasting lipid profile - especially triglyceride level.
2. Postprandial (2 hrs) triglyceride level.
3. Carotid intima - medial thickness of internal and common carotid arteries using B mode USG. (intima-medial thickness > 0.9 mm ± plaque considered positive).

All the tests were done before and after the treatment with Fenofibrate for 8 weeks, 14 men and 6 women were currently taken in study design, more people will be taken subsequently as this is a ongoing study.

Results : Data were collected on fasting and PP TG, as well as carotid intima-medial thickness were measured both before and after treatment with Fenofibrate. Pared t-test was applied for analysis of results. P value for fasting TG (< 0.02), post-prandial TG (< 0.02) shows statistically significant changes but there is no statistical significance in change of carotid intima-medial thickness.

Conclusion : Effect of treatment with fenofibrate shows significant improvement as monotherapy, but its effect on carotid intimomedial thickness was not clear, as on the effect on cardiovascular mortality in Diabetic patients. Probably small sample size and short duration follow up is the limiting factor. We have planed alarger study with longer follow up.

403. Spirometry in Diabetes Mellitus

M Batra, A Chandra, M Chandra, R Mishra, V Atam, NS Verma
King George’s Medical University, Lucknow.

Lung involvement in Diabetes mellitus is in focus because of the role of affected lungs in enhancing insulin resistance thereby increasing diabetes and its complications and also the probable
future role of inhaled insulins which would perhaps require good pulmonary functions.

We studied pulmonary functions by spirometry in patients with type 2 diabetes mellitus and related our observations of FEV₁, FVC and FEV₁/FVC ratio to age, sex, duration of illness, presence of complications and blood sugar levels.

Our study had 41 patients (20 females, 21 males) varying from (36-70 years age), with or without microalbuminuria/ microangiopathic complications.

Stroke and acute cardiac events were not studied as spirometry is not feasible in many of them. All patients were non-smokers, and patients with overt respiratory illness (documented by history, physical examination, Chest skiagram), CHF, pulmonary oedema were excluded. (FEV₁, and FVC less than 80% of predicted, was taken to be measure of lung dysfunction).

We found that: (1) Uncontrolled diabetes status is directly related to pulmonary dysfunction (↓ FEV₁, and ↓ FVC). 57% of patients with uncontrolled Diabetes mellitus had FEV₁ < 80% (p < 0.001) 76% of patients with uncontrolled Diabetes mellitus had FVC < 80% (p < 0.001). 2. FVC was affected more than FEV₁ suggesting restrictive pattern. 3. Presence of micro-angiopathic complications, increases pulmonary dysfunction: Of the 23 patients with albuminuria 52.17% patients had FEV₁ < 80% (p < 0.001) and 65% patients FVC < 80% (p < 0.001). Of the 12 patients with retinopathy 66% patients had FEV₁ < 80% and 65% patients had FVC < 80% (p < 0.001).

412. Effect of Chronic Quinapril Therapy on Heart Rate Variability in Patients with Diabetic Autonomic Neuropathy

S Ray, J Mukhopadhyay, D Giri, Suparna Pal, A Sinha
SSKM Hospital and IPGME and R, Kolkata.

Objectives: Loss of heart rate variability is a strong predictor of malignant arrhythmias and sudden cardiac death. To detect the effect of quinapril on heart rate variability in patients with DAN, the present study was done.

Research Design and Method: The study was done in Cardiologic Clinic in SSKM Hospital Kolkata on 30 patients having Diabetic Autonomic Neuropathy (DAN) documented by abnormal response of heart rate variation during deep breathing. Thirty patients (17 male, 13 female) of mean age 50 (23-64) yrs free from coronary artery disease and arterial hypertension were randomized into quinapril or placebo group. Heart rate variation to deep breathing was recorded at 0 and 6 months. The parameter measured as the mean difference between maximum and minimum heart rates for th 6 measured breathing cycles in beats/ mints (normal response ≥ 15 beats/min, borderline 11-14 beats/min, abnormal response ≤ 10 beats/min).

Results: Table.

<table>
<thead>
<tr>
<th>Patient’s group</th>
<th>Response of heart rate variation to deep breathing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At baseline</td>
</tr>
<tr>
<td></td>
<td>Abnormal</td>
</tr>
<tr>
<td>Quinapril group</td>
<td>N=15</td>
</tr>
<tr>
<td>Placebo group</td>
<td>N=15</td>
</tr>
</tbody>
</table>

Conclusion: Our finding suggests quinapril significantly increases parasympathetic activity in patient with DAN and this might contribute to the reduction of the risk of malignant ventricular arrhythmia in these patients. But in none of the patient the response became completely normal.

413. Study of Dyslipidemia in Coronary Artery Disease Patients with Type 2 Diabetes Mellitus

AK Dash, PB Abhishek, MK Mohapatra, BK Pradhan, GC Behera, RC Sethy, S Tripathy
VSS Medical College, Burla

Aims and Objective: Dyslipidemia is associated with 50% of all diabetic people and contributes to substantial increased risk (3-4 fold) of premature, extensive and accelerated atherosclerosis leading to CAD, PVD and MI etc. It remains silent in majority of patients with diabetes. This peculiarity makes CAD in diabetes the single most important cause of premature mortality accounting for 60-65% of all deaths. The aim of the present study was to determine the pattern of dyslipidemia in patients of CAD with type-2 DM so as to initiate anti-lipidemic therapy for secondary prevention.

Material and Methods: We studied 100 cases of type-2 DM with CAD and without admitted to VSS Medical College and Hospital, Burla, Orissa. The mean age group of the study was 30-69 years from both the sexes. The FBS and 2 hour PPBG was done by glucose oxidase method and serum lipid profile was estimated by enzymatic methods and compared to study the pattern of dyslipidemia.

Results: In the present study dyslipidemia was found in 92% of diabetic patients with LDL hyperlipoproteinemia in 76% (LDL > 100 mg%) HDL dyslipidemia in 64% (HDL < 40 mg%), hypertriglyceridemia in 925 (TG > 150 mg%), and hypercholesterolemia (56%) (> 200 mg%). The lipid profile was significantly altered in patients with coronary artery disease compared to patients without coronary artery diseases.

Conclusion: The major concern in the present study highlights the high percentage of LDL and TG dyslipidemia. However TC and HDL levels were of less significance. In the present study more than 90% of patients were smokers and alcoholics, LDL dyslipidemia is more significant from prognostic and therapeutic point of view, hence pharmacotherapy in the form of statins and TG dyslipidemia can be brought down by blood glucose control itself. Glycemic control should be the first priority followed by fabric acid derivatives or high dose statins.

707. Non-Alcoholic Fatty Infiltration of The Liver in Insulin Resistance Syndrome/Diabetes Mellitus Type II

A Kansal, YP Munjal
Centre for Diabetes and Lifestyle Diabetic, BCIMS, New Delhi.

Aim of the Study: A new and important component of Insulin Resistance Syndrome (IRS) is Non-alcoholic fatty infiltration of the liver (NAFLD) as per the Joint Consensus Statement by the American College of Endocrinology and American Association of Clinical Endocrinologists 2004. Our study was done to confirm this finding and to evaluate the importance of NAFLD in patients of IRS. The study was conducted on 255 patients of diabetes and 72 patients of Insulin Resistance Syndrome, as evidenced by the three criteria of NCEP/ATP III Guidelines.

Material and Methods: 255 patients of Diabetes and 72 patients of IRS attending the Outpatient Department of Centre for Diabetes and Lifestyle Disease, BCIMS, New Delhi were analyzed for age, sex, smoking, anthropometric measurements, BMI, Fasting Blood Glucose Levels, Lipid profile, the presence of Hypertension, CAD, and NAFLD on USG with grading depending upon severity into 3 Grades based on Ultrasonological criteria and the 2 groups were compared. Correlation between the severity, viz, the degree of NAFLD and IRS and correlation between BMI and Abdominal Obesity and IRS was studied.

Conclusion: IT was found that 72.8% of diabetics had fatty liver of varying severity and 65.62% of patients with IRS had...
NAFLD. From the above figures, it is clear that NAFLD is one of the important aspects of IRS.

Clinical Implications: USG, a very simple easily available tool, can detect NAFLD which in turn is a surrogate marker of IRS. Detailed studies are going on to evaluate the reversibility of NAFLD as well as to correlate it with other parameters.

*Adjudged Best Papers and got an award of Rs. 1000/- each from Chairman Scientific Committee, Diamond APICON 2005.