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OBSERVATION ON EFFECTS OF SULPHONYLUREA (SU) ON GLYCAEMIC CONTROL IN INSULIN REQUIRING DIABETICS

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Abstract

The potentiating effect of sulphonylureas (SU) on the action of insulin on target tissues has been demonstrated in vitro. In order to test if this extra pancreatic action operates in clinical situations, the effect of glybenclamide on insulin requirement was studied on 12 insulin requiring diabetes. Five of them (J. type - 4, pancreatic-1) were primary and seven (NIDDM) were secondary sulphonylurea failure.

Following establishment of glycaemic control by regular insulin, glybenclamide was added in doses of 10 mg. b.i.d. During follow up means insulin requirement in patients of primary SU failure fell from 77.6 ± 40 to 60.4 ± 12.14 u/day and that of secondary failure from 75.57 ± 19.2 to 54.16 ± 12.18 u/day ($p < 0.05$). Maintenance of satisfactory control was indicated by mean Hb A₁ level of 6.08 ± 0.41 compared to 12.92 ± 0.80 pretreatment.

On withdrawal of glybenclamide, keeping insulin does constant, there was significant rise in mean blood glucose ($p < 0.01$) in both groups of patients. Effectiveness of glybenclamide in these insulphonylurea subjects provide evidence of extra pancreatic action which may be of use particularly in patients with high insulin requirement.

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OBSERVATIONS ON FACTORS INFLUENCING PLASMA LIPIDS AND LIPOPROTEIN CHOLESTEROL IN NIDDM

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Abstract : Plasma levels of Triglycerides (Tg), total Cholesterol (Tc) and cholesterol content of HDL, LDL and VLDL were estimated in 65 healthy controls and 227 cases of NIDDM aged 25 to 50 years. All lipid parameters were higher ($P < 0.001$) in the 100 uncontrolled diabetics of both sexes compared to controls except HDLc which was lower ($P < 0.001$). Among the male diabetics those with severe hyperglycemia (FBG > 180 mg/dl) had greater disturbances in lipid pattern ($P < 0.001$), but among females only HDLc was lower ($P < 0.02$). Comparison of lipid values obtained from 46 under nourished diabetics (UND) and 44 well nourished diabetics (WND) revealed that HDLc was higher and LDLc lower in UND while there was no significant difference in VLDLc. In diabetics controlled on either insulin or sulphonylurea, values of Tc, Tg, LDLc were lower ($P < 0.001$) and HDLc higher ($P < 0.001$) than the uncontrolled. Only VLDLc was higher in the treated subjects compared to healthy controls. Diabetics with CHD (17) had similar HDLc

but higher VLDLc than the diabetic without vascular complication. It was thus observed that levels were higher in females, among the UND and diabetics with less severe hyperglycemia. All lipid abnormalities, except VLDLc, were fully corrected on establishment of euglycemia. Abnormal level of VLDLc in all categories of NIDDM and particularly in those with CHD suggest that this parameter has close correlation with accelerated atherosclerosis in NIDDM.

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EFFECT OF SHORT COURSE ISABGUL HUSK THERAPY ON BLOOD GLUCOSE AND SERUM IMMUNO REACTIVE INSULIN RESPONSE TO STANDARD ORAL GLUCOSE LOAD IN HEALTHY SUBJECTS

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To study the effect of fibre when not taken with meals, isabgul husk was given for 14 days to healthy medical students (age ranging from 18 to 21 years, and body mass index between 19 to 25) in the dose of 2 teaspoonful with a glass of water taken in the morning and evening at least 2 hours before food intake. They consumed their usual diet during the study period. Oral glucose tolerance test using 75 gms of glucose was performed on day 1 i. e. before starting isabgul and on day 15 i. e. the day following completion of isabgul treatment period. Blood samples were taken for glucose and IRI estimations at fasting, 1 hr and 2 hrs. The mean area under the curve for glucose (AUCg, min. mg/dl) was 2433.6 ± 257.3 before and 2305.2 ± 255.1 after isabgul therapy. The pre and post-treatment values of the area under the curve for insulin (AUCi, min. μ /ml) were 809.8 ± 213.9 and 853.4 ± 238.7 respectively. The mean insulinogenic Index (IGI) were 0.33 ± 0.09 and 0.36 ± 0.10 before and after isabgul respectively. The differences in the pre and post-treatment values for AUCg, AUCi and IGI were statistically not significant ($P < 0.05$). However considerable improvement as judged by post and pre IGI ratio greater than one was observed in 4 (40%) of the subjects.

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SERUM ZINC IN DIABETICS AND THE EFFECT OF SHORT TERM ORAL ZINC THERAPY

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Fasting serum zinc and blood glucose and serum IRI response to a 75 gram. Oral glucose load were determined in 28 freshly detected and untreated diabetics (NIDDM 20, J-type 2 and Pancreatic secondary diabetes (PSD-3), before and after a two week treatment with zinc sulfate (ulsee1) orally, in the dose of 220 mg (one tab) thrice daily. The mean fasting serum zinc levels (mg/dl) were 107.2 ± 12.32 in controls (n=20) and 68.18 ± 9.88 in diabetic subjects, indicating significantly low ($P < 0.001$) serum zinc value in diabetics. The mean fasting zinc level in diabetics rose significantly ($P < 0.001$) to 103.47 ± 13.13 mg/dl with oral zinc therapy. In the NIDDM group (1) area under the curve for glucose (AUCg min, mg/dl) were 9659.1 ± 2621.6 before and 9583.04 ± 2178.5 after zinc treatment, the difference is not statistically significant ($P < 0.05$). However individually analysing 13 out of 23 cases had fall in AUCg (2) the mean area under the curve for IRI (AUCi min,

mu/ml) were 1822 ± 596.6 before and 1789 ± 647.7 following zinc therapy, showing no significant change ($P < 0.05$) as a group, but individually analysing 7 out of 23 cases showed some increase in AUCI varying from 2.3% to 39.6%. Improvement as judged from insulinogenic Index (IGI) was observed in 8 of 80 subjects with NIDDM. It was observed that these 8 cases had duration of diabetes less than 6 months, normal or low BMI, mild to moderate diabetes and mild hypozincemia. Long term therapy with zinc is needed in a larger series of NIDDM to document this beneficial effect.

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BLOOD GLUCOSE RESPONSE TO BREAKFAST TAKEN BEFORE AND AFTER EXERCISE

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Regular and timely exercise is beneficial to diabetics except those in poor control. To find out whether exercise in the form of morning walks is better when performed before or after breakfast, seven uncomplicated non-insulin dependant diabetics who were only on dietary treatment were selected. Breakfast consisted of the diet prescribed to the individual according to the need and exercise consisted of half an hour walk on the road with average speed. On day 1 (T_1) breakfast was taken before exercise, whereas on day 2 (T_2) reverse was the sequence i. e. exercise was followed by breakfast. Venous blood samples were collected for glucose estimation at the start and repeated half an hour for 2 hours. The results expressed as area under the curve for glucose (min, mg/dl) (mean \pm SD) were 6595.7 ± 370.5 for T_1 and 5203.4 ± 205.9 for T_2 . The difference was statistically significant ($P < 0.01$). Data indicate that routine exercise before breakfast is better than that performed after breakfast, an useful information in management of diabetics.

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