Abstract:
Lipid profiles are usually measured after fasting. This study aims at determining the influence of normal food intake on lipid levels in both diabetics and non diabetics. 50 diabetics and 50 healthy individuals were included in the study. From each subject fasting levels of Total Cholesterol, High density lipoprotein- Cholesterol, Low density lipoprotein- Cholesterol and Triglycerides were estimated and compared with two non fasting samples taken 90 minutes and 150 minutes after food intake. The change in lipid profile values were found to be minimal in both diabetics and non-diabetics. Hence the use of non fasting samples for lipid profile would make sampling process much easier.

Keyword: Lipids, Fasting, Non-fasting, Diabetics.

Fasting by definition means 8 hours of fast. Food consumption of humans is distributed throughout the day in the form of 3 meals with snacks and beverages in between meals. So most of us are in non-fasting state throughout the day except in the early morning hours. Triglyceride levels increases markedly during fat tolerance test in which patients are provided a diet containing 1 g fat per kg body weight. The non fasting lipid levels differ minimally from the fasting level as because most of us consume far less fat containing diet normally than during fat tolerance test.

MATERIALS AND METHODS:
Two groups of subjects were studied Group 1- 50 healthy individuals were selected from Master health check up. Group 2- 50 diabetics with poor glycemic control were selected from the blood collection OP who came for regular glucose monitoring. Subjects who were on lipid lowering drugs were excluded from the study.

Three blood samples were collected from each subject. Fasting (F) blood sample was collected after overnight fast and two non fasting samples were collected 90 minutes (NF1) and 150 minutes (NF2) after food intake.
Serum was separated and the samples were analyzed for Glucose (Glucose oxidase-peroxidase method), Total Cholesterol (NF1) sample and fasting versus second (Cholesterol oxidase-peroxidase method), non fasting (NF2) sample was analysed High density lipoprotein-Cholesterol (Direct using paired t test. The fasting and non Immunoinhibition method), Triglyceride fasting values were compared in group 1 (Glycerophosphate oxidase-peroxidase (Healthy individuals) and in group 2 method), Albumin (Bromocresol Green dye (diabetics) separately and both groups binding method) and Low density lipoprotein as a whole. Cholesterol was calculated using Friedwald equation LDL Cholesterol = Total Cholesterol – (HDL Cholesterol + TGL/5)

GROUP 1 (Healthy individuals) GROUP 2

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Compared with fasting levels, Total Cholesterol, HDL cholesterol, LDL cholesterol and Albumin were reduced in NF1 sample and the NF2 values were close to the fasting values. The TGL value was increased in both the non fasting samples. The dip in the cholesterol levels in NF1 samples is attributed to hemodilution caused by fluid intake associated with food intake. The albumin level is used as an indicator of hemodilution. The p value of all comparisons were greater than 0.05, which shows that these changes after food intake are not statistically significant in both the groups. The increase in TGL level was within the limits fixed by CLIA.

DISCUSSION:
We found that the levels of lipids at most changed minimally in response to normal food intake in both diabetics and healthy individuals. Anne Lansted et al in the Copenhagen Prospective study have found that the non fasting levels of lipids, lipoproteins and apolipoproteins predicted increased risk of cardiovascular events and there is no substantial evidence that fasting lipid levels are superior to non fasting levels for cardiovascular risk prediction. The mean TGL level was higher and HDL cholesterol was lower in diabetics when compared to non diabetics. It is well known that diabetics with suboptimal glycemic control have associated derangements in lipid metabolism. An important finding in the study was rise in TGL after food intake was more in the diabetic group than the non diabetic group. The data clearly demonstrates that the non fasting lipid levels or the magnitude of raise in lipid levels after food intake may be a better indicator for assessing the lipid status of the individual. TGL levels were found to be elevated upto 3 to 5 hours after food intake but normally does not exceed 200mg/dL. When non fasting TGL is above 350mg/dL and is used to calculate LDL cholesterol, there is a likely chance of LDL cholesterol being under estimated. To overcome this problem direct LDL cholesterol estimation can be done. The cut off levels of serum non fasting TGL for cardiovascular risk are yet to be defined.

Recent studies suggest that non fasting TGL may predict CVD events similarly or even better than fasting TGL (61% vs 31%) with a practical advantage that the patient need not fast.

In the Women's Health Study, 26,509 healthy American women were followed over 11 years for myocardial infarction, stroke, coronary revascularization procedures and cardiovascular death. Measurements were performed on fasting and non fasting samples. Key observation from the study was that non fasting TGL values were strongly and independently associated with CVD risk.

Additional prospective studies that directly compare the association of fasting and non fasting lipid levels with cardiovascular outcomes in the same individuals would be informative. Further validation studies are needed before a non fasting lipid testing strategy is universally endorsed.

CONCLUSION:
Our findings show that levels of lipids differ only minimally from levels in the fasting state probably because most people consume much less fat containing diet. Also the non fasting levels may be a better predictor of risk of atherosclerosis. It is therefore reasonable to review the arguments often used in favour of fasting versus non fasting lipid measurements, simply because fasting requirement makes blood sampling unnecessarily difficult for millions of people worldwide.
REFERENCES:


