

[3rd: (0.19±0.28) vs 1st: (0.056±0.258)], glucose [3rd: (163.1±55.0) vs 1st: (134.1±46.3)]mg/dl, small HDL [3rd: (11.5±11.3) vs 1st: (0.056±0.258)]mg/dl and total nonHDL [3rd: (154.4±80.4) vs 1st: (119.8±36.1)]mg/dl were significantly increased. LDL particle size [3rd: (263.0±7.3) vs 1st: (271.6±2.9)]Å, large HDL [3rd: (9.57±5.24) vs 1st: (19.34±8.44)]mg/dl, intermediate HDL [3rd: (22.06±5.98) vs 1st: (28.33±6.28)]mg/dl and total HDL [3rd: (40.8±12.6) vs 1st: (57.3±14.1)]mg/dl were significantly reduced. Small LDL [OR 1.214 (95% CI: 1.167–1.264), p < 0.0001], large HDL [OR 0.913 (95% CI: 0.871–0.957), p < 0.0001], lgHOMA [OR 3.501 (95% CI: 1.160–10.561), p = 0.026], SBP [OR 1.024 (95% CI 1.005–1.043), p = 0.013] and ethnicity [OR 2.464 (95% CI: 1.333–4.555), p = 0.004] remained significant independent predictors of TG:VLDL ratio, after adjustment for age and gender.

Conclusion: In T2D patients, higher TG:VLDL ratios was associated with a more insulin resistant and atherogenic profile. Given that patients with increased insulin resistance are more likely to have a TG:VLDL higher than 5, their LDL-C will be underestimated by Friedewald's equation. Non-HDL-C cholesterol is suggested to be a more suitable target in these patients.

PO333

BEING FIRST-DEGREE RELATIVES OF TYPE 2 DIABETES: ON BODY COMPOSITION, INSULIN RESISTANCE AND PHYSICAL ACTIVITY

K. Pertiwi¹, A.B. Lizuardi¹, A. Kurniati¹, S. Sie¹. ¹Nutrition and Health Science, Nutrifood Research Center, Jakarta Timur, Indonesia

Background: One of strong risk factor of type 2 diabetes is having family history of diabetes. Many studies, mostly done in Caucasians, have shown that individuals with family history of diabetes have heightened risk of type 2 diabetes compared to people without family history of diabetes, which are shown by their insulin resistance, although still having normal glucose tolerance. Indonesia is currently in the second position of countries with largest number of diabetics in western pacific, but very few studies existed to examine the risk of first degree relatives in Indonesia.

Method: Fourteen office workers in East Jakarta, age 22–38 years, identified as first degree relatives were grouped as FHD (having first degree relation with T2D patients), and thirteen individuals without any family history of type 2 diabetes were age- and sex-matched to the FHD, designed as the control group (CON). Body composition (measured by bio-impedance analysis using InBody 720), glucose tolerance using OGTT and insulin resistance were evaluated in first degree family relatives of diabetics having normal glucose tolerance and people without family history of diabetes.

Result: Individuals in FDR group had higher body weight, fat mass, percent body fat, waist-to-hip ratio, estimated visceral fat, and significantly higher BMI compared to people without family history of diabetes (p = 0.037). With both groups having normal glucose tolerance, compared to CON group, individuals in FDR group was more insulin resistant (0.80 vs 0.65; p = 0.119), and had higher HOMA2%B (92.67 vs 80.80; p = 0.158) than CON group. Although differences between groups for those parameters were not statistically significant, but these results were comparable in values observed in much larger studies. The assessment to their physical activity levels measured by IPAQ showed that FDR group had significantly lower physical activity levels measured by total walking and vigorous activity compared to CON.

Conclusion: The result supported the evidence that individuals being first degree relatives to diabetics had worse body composition compared to individuals without family history of diabetes. This was observed also in this study with relatively young Indonesians. With regard to the data showing Indonesia as one of the country with high number of diabetics,

this study also suggested the importance to educate first-degree relatives about their heightened risk.

Reference(s)

- Balletshofer BM, et al. 2000. Endothelial dysfunction is detectable in young normotensive first-degree relatives of subjects with type 2 diabetes in association with insulin resistance. *Circulation* 101: 1780–1784.
- De Silva SNT, Weerasuriya N, De Alwis NMW, De Silva MWA, Fernando DJS. 2002. Excess maternal transmission and familial aggregation of Type 2 diabetes in Sri Lanka. *Diabetes Research and Clinical Practice* 58: 173–177.
- Franks PW. 2010. Diabetes family history: A metabolic storm you should not sit out. *Diabetes* 59: 2732–2734.
- Harrison TA et al. 2003. Family history of diabetes as a potential public health tool. *Am J Prev Med* 24(2): 152–159.
- International Diabetes Federation. IDF Diabetes Atlas, 6th edn. Brussels, Belgium: International Diabetes Federation, 2013. <http://www.idf.org/diabetesatlas>.
- Kuo C-K, Lin L-Y, Yu Y-H, Chang C-H, Kuo H-K. 2010. A family history of diabetes mellitus is associated with poor glycemic control and increased metabolic risks among people with diabetes: Data from the National Health and Nutrition Examination Survey 1999–2004. *Inter Med* 49: 549–555.
- Meigs JB, Cupples LA, Wilson PWF. 2000. Parental transmission of type 2 diabetes. *Diabetes* 49: 2201–7.
- Natali A, et al. 2010. Insulin sensitivity and β -cell function in the offspring of type 2 diabetic patients: impact of line of inheritance. *Journal of Clinical Endocrinology & Metabolism* 95: 4703–4711.
- Tan JT, Tan LSM, Chia KS, Chew SK, Tai ES. 2008. A family history of type 2 diabetes is associated with glucose intolerance and obesity-related traits with evidence of excess maternal transmission for obesity-related traits in a South East Asian population. *Diabetes Research and Clinical Practice* 82: 268–275.

PO334

CORRELATION BETWEEN LIPID PROFILES AND RENAL FUNCTION IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

S. Murtiwi¹, A. Tjokroprawiro¹, D. Pramudya¹, A. Pranoto¹, A. Sutjahjo¹, S. Adi¹, S. Wibisono¹. ¹Surabaya Diabetes and Nutrition Center, Surabaya, Indonesia

Background: Chronic Kidney Disease (CKD) is accompanied by characteristic abnormalities of lipid metabolism, which appear as a consequence of nephrotic syndrome or renal insufficiency and are reflected in an altered apolipoprotein profile as well as elevated plasma lipid levels. Experimental and clinical studies have suggested a correlation between the progression of renal disease and dyslipidemia. The underlying pathophysiologic mechanisms for the relationship between lipid levels and progression of renal disease are not yet fully understood, although there are data that oxidative stress and insulin resistance may mediate the lipid-induced renal damage (lipotoxicity). Dyslipidemia is an established cardiovascular (CV) risk factor in the general population. In CKD, however, epidemiologic studies and clinical trials have raised uncertainties regarding the impact of dyslipidemia on clinical outcomes and, consequently, the optimal lipid profile. The increased risk of atherosclerosis in type 2 diabetes mellitus (T2DM) consists of multiple factors. Diabetes-related changes in plasma lipid levels are among the key factors that are amenable to intervention. The spectrum of dyslipidemia in T2DM can include all the various types of dyslipidemia identified in the general population. We studied the relationship between the lipid profile, estimated glomerular filtration rate (eGFR) in patients with T2DM.

Method: This was a cross sectional analytical study which has enrolled patients with T2DM who were on routine follow up in private diabetic clinic). Renal function (eGFR) and blood lipid profiles [total cholesterol (tot-Chol) LDL-Chol, HDL-Chol, triglyceride] was measured. Renal function was measured

using Cockcroft-Gault equation. Correlation between blood lipid profiles and renal function was statistically analyzed by Pearson test.

Result: The samples included 137 T2DM patients (76 male subjects and 51 female subjects) with mean age (62 ± 11.35) years old. Mean of eGFR was 76 ± 27.03 mL/min/1.73 m². The laboratory result of tot-Chol was 203 ± 49.09 mg/dL, triglyceride was 186 ± 163.56 mg/dL, LDL-Chol was 123 ± 41.79 mg/dL, HDL-Chol was 47 ± 13.55 mg/dL. There was no significant correlation between tot-Chol, triglyceride, LDL-Chol, HDL-Chol and renal function ($p = 0.816$; $p = 0.869$; $p = 0.957$ and $p = 0.082$, respectively).

Conclusion: In our study, there was no correlation between lipid profiles and renal function in patients with T2DM.

PO335

CORRELATION BETWEEN LIPID PROFILES AND BODY MASS INDEX IN PATIENTS WITH TYPE II DIABETES MELLITUS

D. Pramudya¹, A. Tjokroprawiro¹, S. Murtiwi¹, A. Sutjahjo¹, A. Pranoto¹, S. Wibisono¹, S. Adi¹. ¹Surabaya Diabetes and Nutrition Center, Surabaya, Indonesia

Background: Epidemiological studies have shown that Asians are more likely to have obesity measured in terms of increased body mass index (BMI). Increased body fats are related to increased insulin resistance and may account for the increased prevalence of type 2 diabetes mellitus (T2DM) in Asians. Prior epidemiologic studies also have shown that increasing BMI is associated with higher total cholesterol, triglyceride and low-density lipoprotein cholesterol (LDL-Chol). However, these studies were limited by underrepresentation of obese subjects. Although obesity in people is more common among countries with high economic standards, its prevalence is growing rapidly in developing countries including Indonesia. With the increasing trend of prevalence of obesity and its risk factors in adult and since obesity is related with cardiovascular diseases (CVD), much attention has been given to obesity in Indonesia. Hyperlipidaemias are common in patients with diabetes and further increase the risk of ischaemic heart disease, especially in T2DM. Detection and control of hyperlipidaemia can reduce myocardial infarction, coronary deaths, and overall mortality. Indeed, even when LDL-Chol concentration is normal or slightly raised in T2DM (the major abnormalities being low HDL cholesterol and high triglyceride concentrations), the LDL-Chol particles may be qualitatively different and more atherogenic than those in non-diabetic patients. Aim of this study is to determine correlation between blood lipid profiles and BMI of patients with T2DM in Surabaya.

Method: This was a cross sectional analytical study which has enrolled patients with T2DM who were on routine follow up in private diabetic clinic. Body mass index (BMI) and blood lipid profiles (total cholesterol (tot-chol), LDL-Chol, triglyceride) were measured. Correlation between BMI and blood lipid profiles was statistically analyzed by Pearson test.

Result: The samples included 137 T2DM patients (76 males and 51 females) with mean age 62 ± 11.35 years, mean BMI 27.56 ± 3.8 kg/m². The laboratory result of tot-chol was 203 ± 49.09 mg/dL, triglyceride was 186 ± 163.56 mg/dL, LDL-Chol was 123 ± 41.79 mg/dL. The triglyceride, LDL level increased with increasing BMI ($p = 0.044$; $p = 0.016$ respectively), but there was no significant correlation between tot-chol versus body mass index ($p = 0.255$).

Conclusion: There was a significant correlation between BMI with triglyceride and LDL-Chol, but not with tot-chol in patients with T2DM.

PO336

DETECTION OF TYPE 2 DIABETES MELLITUS IN MEDICAL STUDENTS

A. Pranita¹, J. Kharche¹. ¹Physiology, Bharati Vidyapeeth Medical College, Pune, Pune, India

Background: Diabetes Mellitus (DM) is a leading cause of morbidity and mortality in developing countries like India. DM comprises a group of common metabolic disorders and is characterized by a state of chronic hyperglycemia due to defective production or action of insulin.

Unfortunately more than 50% of the diabetic patients in India remain unaware of their diabetic status, which increases the risk of development of diabetic complications in them. Hence early identification of the risk factors associated with diabetes and appropriate interventions aimed at preventing the onset of diabetes and its complications are urgently required.

According to World Health Organisation, a disease of the middle-aged and elderly, type 2 diabetes has recently escalated in all age groups and is now being identified in younger and younger age groups, including adolescents and children, especially in high-risk population. This underscores the need for mass awareness and screening programmes to detect diabetes at an early stage and early age. So purpose of the study is to find risk of type 2 diabetes mellitus at an early age using IDRS. To assess Random Capillary Blood Glucose (RCBG) in students having high IDRS score.

Method: All the students of Bharati Vidyapeeth Deemed University Medical College will be screened using IDRS which includes age, family history of diabetes, exercise status and Waist circumference. After scoring them they will be categorised into mild, moderate and high risk group. In students who are having score more than 50, Random Capillary Blood Glucose (RCBG) will be assessed with the help of glucometer.

Result: We have assessed 403 students till now. It was observed that 9%, 36% & 55% students are in High, Moderate & Low risk group respectively for developing type 2 DM. Mean abdominal obesity in high risk students was 98.19 ± 10.42 as compared to 78.52 ± 12.25 in moderate and low risk students ($p < 0.0001$). Family history of diabetes in either or both parents was present in 28% students. 72% students were having sedentary lifestyle. Mean RCBG in students having score more than 50 was 95.10 ± 11.63 mg/dl. Also, 4 students were having RCBG > 103 mg/dl.

Conclusion: This underscores the need for further investigations to detect diabetes at an early stage and to overcome the disease burden of diabetes in future. IDRS is the simplest way to screen large population. Also, RCBG is a simple and practicable test which can be used to predict the risk of type 2 diabetes mellitus. To prevent and to postpone the risk of type 2 diabetes mellitus, health education programme, exercise and diet planning can be recommended for these students.

Reference(s)

- Deepa M, Deepa R, Shanthirani CS, Manjula Datta, Unwin NC, Kapur A, Mohan V. Awareness and knowledge of diabetes in Chennai – The Chennai Urban Rural Epidemiology Study (CURES – 9). *J Assoc Physicians India* 2005; 53: 283–7.
- Mohan V, Deepa R, Deepa M, Somannavar S, Datta M. A simplified Indian Diabetes Risk Score for screening for undiagnosed diabetic subjects. *J Assoc Physicians India*. 2005 Sep; 53: 75.
- Han TS, Sattar N, Lean M. Assessment of obesity and its clinical implications. *British Medical Journal* 2006; 333: 695–698.

Disclosure of Interest: A. Pranita Receiving support from: Bharati vidyapeeth University, J. Kharche Receiving support from: Bharati vidyapeeth University