among population with diabetes, 46% among the prediabetes group, and 21% in the normal group (p<0.05). In the adjusted logistic regression model, relative to the normal group, patients with diabetes were four times more likely to have hepatic steatosis relative to normal group (adjusted odds ratio [AOR]=4.0, 95% confidence level [CI]=2.4–6.8, p<0.05). Population with prediabetes were twice more likely to have hepatic steatosis relative to the normal group (AOR=2.1, 95% CI=1.6–2.6, p<0.05). Among the population with prediabetes, the predictors of hepatic steatosis were age 50–65 years old relative to 20–34 years old (AOR=1.9, 95% CI=1.1–3.2, p<0.05), overweight (AOR=5.4, 95% CI=2.5–11.8, p<0.05), obese (AOR=16.6, 95% CI=7.2–38.0, p<0.05) relative to normal body mass index, and high triglyceride level (>=200 mg/dL) (AOR=4.2, 95% CI=2.6–6.6, p<0.05) versus normal (<150 mg/dL). Blacks with prediabetes were 40% less likely to have hepatic steatosis relative to Whites (AOR=0.6, 95% CI=0.4–0.9, p<0.05). Our study indicates that the prevalence of hepatic steatosis is higher in diabetic and prediabetes groups compared to normal group. In addition, those with prediabetes had more than two times higher chance of having hepatic steatosis relative to the normal group. Further longitudinal studies are needed to explore the causal relation between prediabetes and hepatic steatosis among the adult population. Grant numbers: R01MD012579, R24DA017298, U54MD007598, S21MD000103, UL1TR001881.

Results: 48.9% subjects were females, 51.1% were males, mean duration of diabetes was 3.5 years, mean HbA1c was 8.5%, mean BMI 26.5 kg/m2, mean age was 51.4 years, mean CAD score was 4.1 44.2% of the subjects were in a low risk category, 44.9% were in the intermediate risk category and 10.9% in the high-risk category. The maximum people had intermediate to high risk and were in the age group of 50–60 years (21.3%), followed by 13% in the 60–70 age group. Surprisingly, 12.6% people in the 40-50year age group had an intermediate to high risk score for ASCVD. The high prevalence of intermediate to high risk in relatively younger populations with shorter duration of diabetes (mean duration of diabetes 3.5 years) mandates universal screening for asymptomatic coronary artery disease in all people with type 2 diabetes mellitus. Our study highlights the importance of identifying asymptomatic coronary artery disease using locally relevant risk models and their timely referral to prevent excessive cardiovascular mortality in people with type 2 diabetes mellitus. This would ensure optimum utilization and prioritization of scarce resources in resource crunch situations. Keywords: Screening, asymptomatic CAD, type 2 diabetes mellitus. References: 1. Park G-M, An H, Lee S-W, Cho Y-R, Gil EH, Her SH, et al. Risk Score Model for the Assessment of Coronary Artery Disease in Asymptomatic Patients With Type 2 Diabetes. Medicine [Internet]. 2015 Jan [cited 2020 Oct 14];94(4):e508. Available from: https://journals.lww.com/md-journal/Fulltext/2015/01040/Risk_Score_Model_for_The_Assessment_of_Coronary.44.aspx

Diabetes Mellitus and Glucose Metabolism

DIABETES COMPLICATIONS AND COMORBIDITIES

Screening for Asymptomatic Coronary Artery Disease in People With Type 2 Diabetes Mellitus in a Tertiary Care Center

ajoy tewari, MD.
Jai Clinic & Diabetes Care Centre, Lucknow, India.

Cardiovascular disease is the biggest driver of mortality in people with diabetes. Cardiovascular disease and diabetes share the same risk factors, the so-called “common soil” hypothesis. Asians and more specifically Indians are predisposed to cardiovascular disease, that too at an earlier age. The cost of management of cardiovascular disease in India is prohibitive. Thus, screening for asymptomatic coronary artery disease in people with type 2 diabetes and referring them for further evaluation will go a long way in preventing cardiovascular mortality. 560 consenting previously diagnosed people with type 2 diabetes, undergoing treatment for type 2 diabetes at our center, were recruited in the study. We used the risk score model for the assessment of coronary artery disease in asymptomatic patients with type 2 diabetes (1) because it was easy to use, specific for Asian population and validated with coronary computed tomographic angiography in asymptomatic people with type 2 diabetes. Questions regarding smoking, past history of stroke and duration of diabetes were recorded as per the risk score and accordingly the subjects were labelled low, intermediate and high risk. Anthropometric measurements were recorded, lipid profile was measured, neuropathy assessment was done using the DNS score.

Diabetes Mellitus and Glucose Metabolism

DIABETES COMPLICATIONS AND COMORBIDITIES

Screening for Diabetic Retinopathy in Endocrinology Clinics by Using Handheld Cameras and Applying Artificial Intelligence Algorithms

Zack Dvey-Aharon, Ph.D.,1 Petri Huhtinen, PhD2.
1AHEY Health, New York, NY, USA, 2Optomed, Oulu, Finland.

According to estimations of the World Health Organization (WHO), there are almost 500M people in the world that suffer from diabetes. Projections suggest this number will surpass 700M by 2045 with global prevalence surpassing 7%. This huge population, alongside people with pre-diabetics, is prone to develop diabetic retinopathy, the leading cause of vision loss in the working age. While early screening can help prevent most cases of vision loss caused by diabetic retinopathy, the vast majority of patients are not being screened periodically as the guidelines instruct. The challenge is to find a reliable and convenient method to screen patients so that efficacy in detection of referral diabetic retinopathy is sufficient while integration with the flow of care is smooth, easy, simple, and cost-efficient. In this research, we described a screening process for more-than-mild retinopathy through the application of artificial intelligence (AI) algorithms on images obtained by a portable, handheld fundus camera. 156 patients were screened for mtmDR indication. Four images were taken per patient, two macula centered and two optic disc centered. The 624 images were taken using...
the Optomed Aurora fundus camera and were uploaded using Optomed Direct-Upload. Fully blinded and independently, a certified, experienced ophthalmologist (contracted by Optomed and based in Finland) reviewed each patient to determine ground truth. Indications that are different than mtmDR were also documented by the ophthalmologist to meet exclusion criteria. Data was obtained from anonymized images uploaded to the cloud-based AEYE-DS system and analysis results from the AI algorithm were promptly returned to the users. Of the 156 patients, a certified ophthalmologist determined 100% reached sufficient quality of images for grading, and 36 had existing retinal diseases that fall under exclusion criteria, thus, 77% of the participants met the participation criteria. Of the remaining 120 patients, the AEYE-DS system determined that 2 patients had at least one insufficient quality image. AEYE-DS provided readings for each of the 118 remaining patients (98.3% of all patients). These were statistically compared to the output of the ground truth arm. The patient ground truth was defined as the most severe diagnosis from the four patient images; the ophthalmologist diagnosed 54 patients as mtmDR+ (45% prevalence). Of the 54 patients with referable DR, 50 were diagnosed and of the 64 mtmDR- patients, 61 were correctly diagnosed by the AI. In summary, the results of the study in terms of sensitivity and specificity were 92.6% and 95.3%, respectively.

The results indicated accurate classification of diabetic patients that required referral to the ophthalmologist and those who did not. The results also demonstrated the potential of efficient screening and easy workflow integration into points of care such as endocrinology clinics.

Diabetes Mellitus and Glucose Metabolism
DIABETES COMPLICATIONS AND COMORBIDITIES

Serum Albumin Modifies the Effect of Peripheral Blood Monocytes on Severity of Diabetic Nephropathy
Cagney Cristancho, MD.
MetroWest Medical Center/Tufts University school of Medicine, Cambridge, MA, USA.

Aims: To characterize clinical associations with peripheral blood immune populations, serum inflammatory markers, and diabetic nephropathy in persons with type 2 diabetes mellitus. Methods: We identified a cohort of clinically well-defined patients from a primary care clinic at a medium-sized academic medical center. We queried hospital records between 2018 and 2019 for complete blood counts with differentials, serum inflammatory markers, and urine microalbumin/creatinine ratios. 198 patients met these criteria. We assessed univariable and multivariable associations between demographic, clinical, and peripheral blood predictors of kidney end-organ damage as determined by microalbumin/creatinine ratios or estimated glomerular filtration rate. All analyses used linear or logistic regression models. Results: Adjusted analyses demonstrated significant (p<0.01) associations between higher urine albumin/creatinine ratio and peripheral circulating monocytes independent of other established significant risk factors including blood pressure, hemoglobin A1c, age, and gender. We also identify serum albumin as an unexpected but potentially important modifying factor of kidney disease which interacts with monocytes. Conclusion: Circulating monocytes and serum albumin are significantly associated with diabetic nephropathy. These results support the potential role of the innate immune system in diabetic microvascular end-organ damage, and may be readily translatable clinical markers to incorporate into risk-assessment models for prognostication in diabetes.

Diabetes Mellitus and Glucose Metabolism
DIABETES COMPLICATIONS AND COMORBIDITIES

The Possible Link Between Serum Lipocalin-2 Level and Mild Cognitive Impairment in Adults With Metabolic Syndrome
Kanokporn Pinyopornpanish, MD, Arintaya Phrommintikul, MD, Chaisiri Angkuravaranon, MD, PhD, Sirinart Kumfu, PhD, Nipon Chattipakorn, MD, PhD, Siriporn C. Chattipakorn, DDS, PhD.
CHIANGMAI UNIVERSITY, Chiang Mai, Thailand.

Introduction: Metabolic syndrome (MetS) is associated with an increased risk of cognitive impairment. Lipocalin-2 (LCN2) or neutrophil gelatinase-associated lipocalin (NGAL), is an inflammatory protein, and participates in the innate immune response. LCN2 significantly decreased in the cerebrospinal fluid of individuals with mild cognitive impairment. A recent study reported that circulating lipocalin-2 is involved in early AD pathogenesis. However, the association of LCN2 and cognition in MetS patients are still unclear. Then, the present study aims to evaluate whether serum LCN2 levels are associated with alteration of cognitive function in MetS subjects.

Methods: Participants with MetS, but without dementia or prior psychiatric problems, were enrolled to the study. The demographic data and physical examination were assembled. Blood samples were collected to evaluate the metabolic parameters. Levels of serum LCN2 were determined with ELISA assay. The global score of the Thai version of Montreal cognitive assessment (MoCA) was used to assess cognitive function. Multivariable regression analysis was used to determine the associations.

Results: Among 202 MetS participants, 111 (54.95 %) were female, and average age was 64.6 (SD 8.6). Mean serum LCN2 and MoCA score were 30.7 ng/ml (SD 17.6) and 19.3 (SD 4.8), respectively. Serum LCN2 levels were negatively associated with the MoCA scores in crude analysis (B=-0.053; 95%CI -0.090, -0.015; p 0.006). After adjustment for age, sex, waist circumference, and creatinine levels, there was an association between the higher serum LCN2 levels and the lower MoCA scores (B=-0.049; 95%CI -0.090, -0.008; p 0.019).

Conclusion: These findings suggest the association between serum LCN2 levels and MCI in MetS subjects. However, further longitudinal study should be investigated to support the link between serum LCN2 levels and cognitive impairment.