

and nutrition supply. We altogether treated this patient, and the diabetic foot ulcer was healed eventually.

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Periodontitis prevention program effectively reduced the incidence of periodontitis in diabetic patients

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A five-year follow up conducted by Firatli found that, clinically, the number of cases of periodontal attachment loss and teeth loss among diabetic patients is significantly bigger compared to people without diabetes. To address the situation, establish a periodic periodontitis screening and care system for diabetic patients and have set up a designated screening site. Diabetes educators help patients learn information about periodontitis and oral care and provides prompt and proper individual medical interventions to reduce the possibility of teeth loss or chewing disorders caused by periodontitis and to enhance diabetic patients' overall health condition. The rate of dental abnormalities among diabetic patients found in screening had gone down from 51.9% to 29.9%. This improvement shows that promulgating oral care allows diabetic patients to take this issue seriously and care more about their oral condition.

Executing Approach:

1. Establish a cross departmental diabetic periodontitis screening team comprise of Dentistry and Health Education Center; members include dentists, physicians of Diabetes Shared Care Network, diabetes educators, oral health educators and administrative assistants to jointly carry out "Diabetic Periodontitis Prevention Program".
2. To prevent patients from withdrawing from screening due to lengthy waits, a designated periodontal screening site besides the education center is set up.
3. Professional oral health educators will later on provide education and relevant instructions and arrange patients with abnormal screening results to receive treatment at Dentistry outpatient clinics.
4. On patients' clinic visits, attending physicians that have written the request sheet to their patients can look up the screening results and give instructions to them while informing them of the importance of oral health or of the prevention of periodontal diseases.

Program Achievement: 12 oral healthcare promulgation events attracted 344 community members to participate in. The number of diabetic patients receiving screening between August 2012 and June 2015 was 4,012. Comparing the screening achievement in 2014 with that in 2013, the rate of dental abnormalities among diabetic patients found in screening had gone down from 51.9% to 29.9%.

Conclusion: The execution of Diabetic Periodontitis Prevention Program has not only raised the awareness of oral care and knowledge and skills about self-care among periodontitis high-risk group: diabetic patients, its promulgation of screening has also helped identify periodontitis patients and helped them seek medical attention. The care provided by Diabetes Case Management annually tracks and reminds patients to receive screening and treatment.

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Associations of glycated hemoglobin A1c and glycated albumin with subclinical atherosclerosis in the Chinese population with impaired glucose regulation

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Objective: Glycated hemoglobin A1c (HbA1c), which can reflect the mean blood glucose levels over the previous 2 to 3 months, attaches great importance to the glucose monitoring system. Some new indicators, such as glycated albumin (GA) with ability to reflect the blood glucose levels during the previous 2 to 3 weeks, have been gradually put into clinical application and provided HbA1c with complementary information in recent years. The aim of this study was to investigate the associations of HbA1c and GA with subclinical atherosclerosis in middle-aged and elderly Chinese subjects with impaired glucose regulation.

Methods: A total of 640 subjects with impaired glucose regulation and without history of cardiovascular disease or carotid artery plaque in Shanghai community were recruited for this study (256 men and 384 women; age range, 40 to 70 years old). Carotid ultrasonography was used to measure the carotid intima-media thickness (C-IMT), which was an indicator of subclinical atherosclerosis. Increased C-IMT was defined as ≥ 0.70 mm (the upper quartile). HbA1c was determined by high-performance liquid chromatography. Serum GA was assayed using the enzymatic method.

Results: The HbA1c and GA levels were higher in subjects with increased C-IMT than those with normal C-IMT (both $P < 0.01$). Correlation analysis revealed that both HbA1c and GA were positively associated with C-IMT ($r = 0.135$ and 0.112 , respectively; both $P < 0.01$). Logistic regression analysis showed that both HbA1c (odds ratio = 2.630, 95% confidence interval: 1.401–4.935; $P = 0.003$) and GA (odds ratio = 1.215, 95% confidence interval: 1.008–1.466; $P = 0.041$) were independent factors associated with increased C-IMT.

Conclusions: In middle-aged and elderly Chinese subjects with impaired glucose regulation, both elevated levels of HbA1c and GA were associated with increased C-IMT, suggesting that HbA1c and GA could reflect the risk of subclinical atherosclerosis.

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Asymmetric Dimethylarginine correlates significantly with tumour necrosis alfa but not with brachial ankle pulse wave velocity in the T2DM-METS

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Background: Endothelial dysfunction is an important phenomenon in the pathogenesis of atherosclerosis and is related to the derangements of nitric oxide (NO) synthase in the vessel wall. Asymmetric Dimethylarginine (ADMA) is an endogenous, competitive inhibitor of nitric oxide synthase and is induced by inflammatory cytokines of tumour necrosis factor (TNF)- α in vitro. Increased ADMA levels are associated with reduced NO synthesis as assessed by impaired endothelium-dependent vasodilatation. There is cause and effect relationship between endothelial dysfunction and vascular stiffening. Measurement of brachial ankle pulse wave velocity (baPWV) is simple and applicable for cardiovascular risk screening and as a marker for the severity of atherosclerotic vascular damage.

Aim: To investigate the correlation between ADMA level with TNF- α and baPWV in the type-2 diabetes mellitus (T2DM)-Metabolic Syndrome (Mets) patients.

Method: This is a cross sectional study with T2DM-Mets patients who came to the outpatient clinic of Soetomo Hospital Surabaya during January 2010 to December 2012. Subjects met the inclusion and exclusion criteria were measured their ADMA, TNF- α , and blood glucose levels in plasma. Brachial ankle pulse wave velocity (ba-PWV) was determined by using the V Serra-1000. The study was approved

by the local Research Ethics Committee and subjects gave written informed consent.

Results: Thirty-seven T2DM-Mets patients consisted of 15 (40.5%) males and 22 (59.5%) females who met inclusion and exclusion criteria were enrolled in this study. Their mean of age was 51 ± 5.2 years old, duration of illness was 16.49 ± 23.4 months, A1C level was $8.5 \pm 0.9\%$, BMI was 26.7 ± 4.5 kg/m², ADMA level was 0.572 ± 0.2 μmol/L, TNF-α level was 10.0 ± 16.5 pg/mL, and ba-PWV was $1,624.5 \pm 295.5$ cm/s. Spearman's correlation analysis showed that ADMA level was significantly correlated with TNF-α level ($p = 0.026$; $r = 0.366$). However, no significant correlation found with ba-PWV ($p = 0.134$; $r = 0.251$). **Conclusion:** ADMA level is correlated with TNF-α level in this T2DM-MetS population.

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Limb preservation affects survival for diabetic patients with infectious foot gangrenes

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Objective: Infectious gangrene of foot is a medical emergency for diabetic patients. Lower-extremity amputation (LEA) is usually inevitable for in such circumstance. Nevertheless, the survival and factors associated mortality of these patients has not been understood.

Method: A total of 157 type 2 diabetic patients treated for infectious foot gangrenes at a major diabetic foot center in Taiwan from 2002 to 2009 were enrolled. Prompt major LEA (above the ankle) for life saving was found in 59 patients (major LEA one-stage group). Among 98 patients received initial minor LEA (below the ankle) to remove gangrene tissue, 67 subjects successfully healed (minor LEA group) while 31 subjects needed further major LEA (major LEA two-stage group). After treatment, their survival was followed as of December 2012. Clinical information at admission was used for survival analysis.

Result: One hundred and nine patients died, with a median survival time of 3.12 years. Age [hazard ratio 1.037 (95% CI 1.010–1.066)], dialysis state [2.173 (1.029–4.585)] and major LEA [1.957 (1.113–3.443)] were independent factors associated with mortality.

Patients in minor LEA group had better median survival time (5.5 years) when compared with major LEA one-stage and two-stage groups (1.8 and 2.7 years, respectively). The survival curves of major LEA one-stage and two-stage groups revealed no difference (Log rank $P = 0.368$).

Abnormal ankle-brachial index (ABI, >1.4 or ≤ 0.9) was the independent risk for healing failure that lead to two-stage major LEA (multi-variable regression analysis by adjusted with age, smoker, hypertension, major adverse cardiac event, and renal function).

Conclusion: In diabetic patients with infectious foot gangrenes, major LEA and dialysis state were the factors affect survival. Limb preservation to keep amputation level below the ankle has better survival. The abnormal ABI is the independent factor leading to two-stage major LEA.

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TG/HDL-C ratio predicts development of albuminuria in type 2 diabetes with ACR <10 mg/gm. A prospective cohort study

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Low normoalbuminuria (ACR < 10 mg/gm) is currently recognized as near normal renal function in type 2 diabetes. We

hypothesized that TG/HDL-C ratio is the early biomarker to predict the development of DKD for type 2 diabetes. We enrolled 809 type 2 diabetic subjects with ACR < 30 mg/gm between 2003 and 2005 and followed them through the end of 2012. Among them, 518 subjects had ACR < 10 mg/gm. The average follow-up time was 6.2 years. The incidence rate ratio and Cox proportional hazards model were used to evaluate the association between baseline demographics and biochemical variables and development of albuminuria in 518 subjects with ACR < 10 mg/gm and 809 subjects with ACR < 30 mg/gm, respectively. Among 809 subjects with ACR < 30 mg/gm, 390 entered in albuminuric stage while 205 subjects developed albuminuria in 518 diabetes with ACR < 10 mg/gm. By using Cox proportional hazards model, we found that education, basal ACR and HOMA-IR in subjects with ACR < 30 mg/gm are independent predictors for development of albuminuria, whereas education, basal ACR, and TG/HDL-C ratio are in subjects with ACR < 10 mg/gm. Compared with those in the lowest quartile of TG/HDL-C ratio, the multivariate HR for those in the 2nd, 3rd, and highest quartiles were 1.08 (95% CI 0.66–1.79), 1.38 (0.85–2.24), and 1.71 (1.03–2.82), respectively (trend test: $P < 0.015$) in diabetes p with ACR < 10 mg/gm. According to the dose-response effects of TG/HDL-C ratio shown in this prospective study, we conclude that TG/HDL-C ratio could be an early predictor for development of albuminuria in type 2 diabetes.

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Specific responsibility team for vascular interventions in diabetic foot decreases major lower limb amputation rate

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Objective: In Kaohsiung Chang Gung Memorial Hospital (KCGMH), patient with diabetic foot received treatment by an intensive team care in internal medicine ward. The intensive team was established by metabolic, plastic surgery, cardiovascular surgery and orthopedic specialist in 2005. And another specific responsibility team for percutaneous transluminal angioplasty (PTA) was also established by cardiologist in 2011. This study aimed to assess the quality of diabetic foot care provided in KCGMH before and after establishment of the PTA team.

Method: This was a retrospective review of data from 2013 to 2015 and in 2009 at Kaohsiung Chang Gung Memorial Hospital. Patient who had been diagnosed with diabetic foot ulcer during the study period were included. We collected the comorbidities, chronic complications and interventions to compare the differences of the major lower limb amputation rate before and after establishment of the specific responsibility PTA team.

Result: In total, 428 patients with T2DM underwent diabetic foot treatment at the KCGMH during the study period. When comparing to the patients distribution in 2009, the rate of comorbidities, including cerebral vascular accident, coronary artery disease, end stage renal disease, hypertension, dyslipidemia are significantly higher in 2013 to 2015. The rate of peripheral artery occlusive disease and people received percutaneous transluminal angioplasty (PTA) in 2013 to 2015 are also significantly higher (29.0% vs. 7.6%, $p < 0.001$). Furthermore, the rates of major lower limb amputation are lower after the intervention of specific responsibility PTA team (15.8% vs. 19.8%) and patients receiving PTA had significantly lower amputation rates during this period (10.1% vs. 19.8%, $p = 0.026$).

Conclusion: This study suggests that the specific team of PTA by cardiologist improves the major lower limb amputation rate in patients with diabetic foot, even with more comorbidities and chronic complications.