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ASSOCIATION BETWEEN ALBUMINURIA AND SLOW GAIT SPEED IN MALES WITH TYPE 2 DIABETES

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OBJECTIVES

Chronic kidney disease is highly prevalent in older patients with type 2 diabetes (T2D). Albuminuria is a marker of vascular endothelial pathology that reflects increased inflammatory state of CKD. Such vascular pathology could contribute to skeletal muscle damage and poor physical performance. We aimed to investigate association between albuminuria and gait speed in males with T2D.

METHODOLOGY

We conducted a cross-sectional on 100 male patients (mean age 63.3±7.3 years) with T2D. Slow gait speed was defined as ≤0.8 m/s. Albuminuria was defined as urinary albumin-to-creatinine ratio (uACR) ≥ 30 mg/g. Logistic regression was performed to examine relationship between albuminuria and slow gait speed, adjusting for demographics, diabetes duration, blood pressure, haemoglobin A1c, estimated glomerular filtration rate (eGFR) and appendicular skeletal muscle mass.

This research has been approved by an ethics committee.

RESULTS

There were 51 patients with slow gait speed. The median uACR was 35 mg/g (IQR 10-174) and 50.6% of patients had albuminuria. Univariate analysis showed that albuminuria was positively associated with slow gait speed with odds ratio (OR) 2.80 (95%CI 1.20-6.57; p=0.017). The association persisted in the fully adjusted analysis with OR 4.56 (95% CI 1.24-16.77; p=0.022). Similar findings were observed using log-transformed uACR as a continuous variable with OR 1.67 (95% CI 1.19-2.36; p=0.003) in the fully adjusted analysis. There was no evidence of association between eGFR and slow gait speed.

CONCLUSION

Albuminuria was independently associated with slow gait speed in T2D. Hence, evaluation of albuminuria is a potential tool to identify older patients at risk of functional impairment.

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ASPALATHIN-RICH GREEN ROIBOS EXTRACT IN COMBINATION WITH GLYBURIDE AND ATORVASTATIN ENHANCES LIPID METABOLISM IN A db/db MOUSE MODEL

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OBJECTIVES

This study investigated the effects of combining an aspalathin-rich green rooibos extract (GRT) with glyburide and atorvastatin in a type 2 diabetic (db/db) mouse model.

METHODOLOGY

Db/db mice were treated orally with glyburide and atorvastatin and GRT as mono and combination therapies for 5 weeks. An intraperitoneal glucose tolerance test was conducted at 3 weeks of treatment. Serum was collected for lipid analyses and liver tissues were collected for histological examination and gene expression.

RESULTS

There was an increase in the fasting plasma glucose (FPG) of the db/db compared to the lean mice (from 7.98 ± 0.34 to 26.44 ± 1.84, p<0.0001). GRT reduced FPG levels in db/db mice when compared to untreated controls (from 26.44 ± 1.84 to 18.7 ± 4.4, p<0.001) without affecting bodyweight. Glyburide had no effect on FPG alone or in combination with GRT in db/db mice. Atorvastatin reduced cholesterol (from 4.00 ± 0.12 to 2.93 ± 0.13, p<0.05) and triglyceride levels (from 2.77 ± 0.50 to 1.48 ± 0.23, p<0.05). The hypo-triglyceridemic effect of atorvastatin was enhanced when combined with GRT and glyburide (from 2.77 ± 0.50 to 1.73 ± 0.35, p =0.0002). Glyburide reduced the severity and pattern of steatotic lipid droplet accumulation from a mediovesicular type across all lobular areas, whilst GRT

with glyburide reduced the abundance and severity of lipid droplet accumulation predominantly in the centri- and mediolobular areas. GRT, glyburide and atorvastatin reduced the abundance and severity of lipid accumulation as well as the intensity score.

CONCLUSION
GRT or glyburide in combination with atorvastatin had no effect on blood glucose or lipid profiles, but a significant reduction in lipid droplet accumulation was observed.

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COMPARISON OF THRICE-DAILY PREMIXED HUMAN INSULIN WITH BASAL-BOLUS THERAPY AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS

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OBJECTIVES
In Malaysia's public hospitals, 82.4% of insulin-treated type 2 diabetes mellitus (T2DM) patients were taking human insulin due to budget constraints. Twice-daily premixed human insulin (PHI) regimen was intensified to basal-bolus (BB) regimen when glycemic control was inadequate. We aimed to compare the efficacy and safety of thrice-daily (TDS) PHI with BB regimen.

METHODOLOGY
A cross-over study among T2DM patients was conducted in Penang Hospital between October 2020 and June 2021. Patients in Group A were assigned to TDS and crossed-over to BB at week-12, and vice versa for group B. Glycated haemoglobin (HbA1c), total daily dose (TDD) of insulin, weight, hypoglycaemia, and adherence to insulin injection were measured at baseline, week-12 and week-24.

RESULTS
Forty-four patients (75% female; baseline mean HbA1c 9.55%; mean duration of T2DM 16 years) were included. Mean HbA1c reduced significantly from baseline to week-12 for group A (-0.95%, p<0.001) and group B (-1.06%, p<0.001) respectively. No difference in HbA1c in group A (-0.25%, p=0.212) when switching to BB at week-12 to week-24 but HbA1c reduced significantly in group B (-0.49%, p=0.007) when switching to TDS and significant between the groups, p=0.026. In group A, no difference in TDD but weight reduced significantly at week-12 (-0.5 kg, p=0.002). TDD increased significantly in group B (p=0.042) from baseline to week-12 and between the groups (p=0.044). Meanwhile, no difference in hypoglycaemia and adherence were observed within and between the groups.

CONCLUSION
Thrice-daily PHI is an effective and safe alternative to BB regimen when intensifying insulin treatment.

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PREDICTORS OF WORSENING GLYCEMIC CONTROL INDICES AND VARIABILITY AMONG ADMITTED MODERATE TO CRITICAL COVID-19 PATIENTS WITH TYPE 2 DIABETES MELLITUS

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OBJECTIVES
It has been noted that COVID-19 infection increases the risk of poor blood glucose control in T2DM patients and since diabetes is associated with low-grade chronic inflammation, COVID-19 exacerbates this inflammatory condition leading to heightened insulin resistance and hyperglycemia. Invariably, mortality risk is increased with hyperglycemia and poor glycemic variability, hence, this study aims to identify the predictors associated with glycemic control and variability among patients with COVID-19 and T2DM.

METHODOLOGY
This is a retrospective cross-sectional analytical study involving 109 patients with the diagnosis of moderate to severe COVID-19 and T2DM. Records review was done from March 2020 to June 2021. Odds ratio from binary logistic regression were computed to determine predictors for worsening glycemic control indices and variability. This research has been approved by the UST Hospital Research Ethics Committee.

RESULTS
Of the 109 patients, 78% had worsening glycemic control and variability, and 22% had no worsening outcomes. Chronic kidney disease (OR 2.83, p=0.035) was associated with poor glycemic variability. In contrast, increasing eGFR level (OR 0.97, p=0.004) was associated with less likelihood of worsening variability. HsCRP (OR 1.01, p=0.011), HbA1c (OR 1.86, p=0.003), severe COVID-19 (OR 8.91, p=0.008) and critical COVID-19 (OR 4.42, p=0.003) were associated with worsening glycemic control. Steroid use (OR 71.17, p<0.001) showed the strongest association with hyperglycemia.

CONCLUSION
Potential clinical, laboratory and inflammatory profiles were identified as predictors for worsening outcomes. HbA1c, hsCRP, and COVID-19 severity are predictors of hyperglycemia. Likewise, chronic kidney disease is a predictor of poor glycemic variability.