



MICRO LABS LIMITED

Diabetes Update

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Dear Doctor,

Greetings from Micro Labs Limited. We are happy to bring you **"DIABETES UPDATE"** which contains latest and interesting news in the field of Diabetes and Endocrinology.

- Effect of Metformin on Diabetic Retinopathy
- Mediterranean dietary pattern and cognitive performance in patients with type 1 or type 2 diabetes
- Role of Glycemic variability in the follow-up of type 1 diabetes under intensive care

Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Limited



Effect of Metformin on Diabetic Retinopathy

Diabetic retinopathy (DR) is the most common complication of diabetes mellitus. Good glycemic control remains the core foundation of managing T2DM. Pharmacotherapy plays a vital role in preventing or delaying the onset and progression of the irreversible microvascular complications of T2DM, such as damage related to retinopathy and nephropathy.

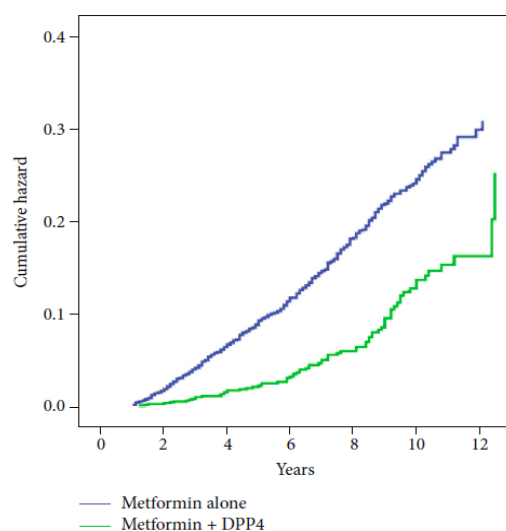
Besides its glucose-lowering effects, metformin, a first-line treatment for T2DM, has considerable antiangiogenic and anti-inflammatory effects on the retinal vasculature, as shown by animal studies. This study was done to assess the relationship between metformin use and the severity of diabetic retinopathy (DR) in patients with type 2 diabetes mellitus (T2DM) and to investigate the effect of metformin dosage on reducing the incidence of DR.

The study population included patients with newly diagnosed T2DM, who were aged ≥ 20 years and prescribed with antidiabetic drug therapy lasting ≥ 90 days, as identified using the National Health Insurance Research Database between 2000 and 2012. Fan et al. matched metformin users and nonusers by a propensity score. Cox proportional hazard regression analyses were used to

compute and compare the risk of developing non-proliferative diabetic retinopathy (NPDR) in metformin users and nonusers.

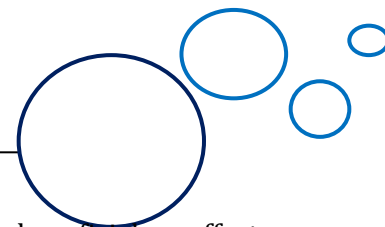
Overall, 10,044 T2DM patients were enrolled. Metformin treatment was associated with a lower risk of NPDR (aHR 0.76, 95% CI 0.68–0.87) and sight-threatening diabetic retinopathy (STDR, aHR 0.29, 95% CI 0.19–0.45); however, the reduction in risk was borderline significant for STDR progression among NPDR patients (aHR 0.54, 95% CI 0.28–1.01).

Combination therapy of metformin and DPP-4i exhibited a stronger but inverse relationship with NPDR development (aHR 0.32, 95% CI



Metformin treatment in patients with T2DM was associated with a reduced risk of NPDR.

0.25–0.41), especially at early (<3 months) stages of metformin prescription. These inverse relationships were also evident at



different metformin doses and in adapted Diabetes Complications Severity Index scores (aDCSI). Moreover, combination therapy of metformin with sulfonylureas was associated with an increased risk of NPDR. Metformin treatment in patients with T2DM was associated with a reduced risk of NPDR, and a potential trend was found for a reduced STDR risk in patients who had previously been diagnosed with NPDR. Combining metformin with DPP-4i seemingly had a

significantly beneficial effect against NPDR risk, particularly when aDCSI scores were low, and when metformin was prescribed early after T2DM diagnosis. These results may recommend metformin for early treatment of T2DM.

Source: Metformin Treatment Is Associated with a Decreased Risk of Nonproliferative Diabetic Retinopathy in Patients with Type 2 Diabetes Mellitus. J Diabetes Res. 2020 Apr. ID 9161039:1-12

Mediterranean dietary pattern and cognitive performance in patients with type 1 or type 2 diabetes

Studies have established an association between Diabetes mellitus and the increased risk of cognitive impairment. Systematic review on dietary behaviour and cognitive function found that the Mediterranean diet (MedD), which is characterized by high intake of fruits, vegetables, cereals, nuts and moderate intake of fish, and dairy products and low intake of saturated fat and meat, may have beneficial effects on cognitive performance. The aim of the present study was (i) to identify associations between MedD and cognitive performance, particularly in verbal memory, in patients with recently diagnosed type 1 or type 2 diabetes or a known diabetes

duration of at least five years as well as in metabolically healthy individuals and (ii) to investigate possible differences between these diabetes types.

The present cross-sectional analysis comprises participants of the German Diabetes Study (GDS)5, namely 41 metabolically healthy individuals, 119 individuals with type 1 diabetes and 180 individuals with type 2 diabetes with a known disease duration of <1 year or ≥5 years. Participants underwent comprehensive metabolic phenotyping and cognition testing using the standardized test battery “Brief Assessment of Cognition in Schizophrenia” (BACS) and

Closer adherence to MedD may exert beneficial effects on cognitive performance in the course of type 2 diabetes

additional cognitive tests assessing different cognitive domains. Adherence to the Modified Mediterranean diet scale (MMDS) was computed from a food frequency questionnaire.

Among patients with type 2 diabetes with a known diabetes duration ≥ 5 years, closer adherence to the MMDS was associated with higher score in verbal memory after adjustment for potential confounders ($P = 0.043$). Adherence to the MMDS did not relate to verbal memory in

recently diagnosed type 2 diabetes ($P = 0.275$), recently diagnosed or longer-standing type 1 diabetes ($P = 0.215$ and $P = 0.626$, respectively) or metabolically healthy individuals ($P = 0.666$). In conclusion, closer adherence to MedD may exert beneficial effects on cognitive performance in the course of type 2 diabetes.

Source: Kössler T et al. Nutr Diabetes . 2020 Apr 1;10(1):10.

	T1 Mean (95% CI)	T2 Mean (95% CI)	T3 Mean (95% CI)	<i>P</i> ^a
type 2 diabetes ($n = 61$)				
Model 1 ^b	-0.84 (-1.44; -0.24)	-0.74 (-1.17; -0.32)	0.01 (-0.50; 0.53)	0.010
Model 2 ^c	-0.78 (-1.38; -0.17)	-0.82 (-1.25; -0.38)	-0.03 (-0.54; 0.49)	0.026
Model 3 ^d	-0.76 (-1.35; -0.17)	-0.78 (-1.21; -0.35)	-0.10 (-0.61; 0.41)	0.043

Values are least-square means with 95% CI.

Bold indicates $P < 0.05$.

MWT-B multiple choice word test B, T tertile, TEI total energy intake.

^aBased on multiple linear regression models with the Modified Mediterranean diet scale as continuous variable.

^bModel 1, unadjusted.

^cModel 2 adjusted for age, sex and TEI.

^dModel 3 adjusted for model 2 plus MWT-B.

Role of Glycemic variability in the follow-up of type 1 diabetes under intensive care

Glycated hemoglobin A1c (A1C) levels have traditionally been the gold standard for assessing glycemic control and treatment efficacy in patients with type 2 diabetes. However, A1C does not take into account fluctuations in blood glucose levels known as glycemic variability (GV). Besides the ability to predict the chronic complications of diabetes glycemic variability (GV) may also allow

identification of patients at higher risk of developing severe hypoglycemia. This is why the approach of GV in the treatment of type 1 diabetes has been quite prominent in recent years. This study aimed to evaluate the GV pattern between individuals with T1D under different types of intensive treatment and the correlations of this GV with



different clinical and biochemical variables.

Volunteers with T1D (n=90) under different types of intensive treatment (NPH insulin, n=54; insulin glargine, n=19; and continuous subcutaneous insulin infusion (CSII) system, n=17) were analyzed in relation to glycemic control and GV. The glycated hemoglobin (HbA1c) and estimated average glucose (eAG) were used to estimate glycemic control. The daily average glucose (DAG) and its standard deviation (SDDAG) and coefficient of variability (CVDAG), as well the change in the levels of glycated hemoglobin (Δ HbA1c) were used to estimate GV.

Patients under CSII presented lower values of HbA1c, eAG, DAG, SDDAG and CVDAG than the other groups. DAG (median=189 mg/dL and IQR=157- 232) and SDDAG (median=89.8 mg/dL and IQR=72-111) correlated positively with HbA1c, with correlations coefficients of 0.67 and 0.64, respectively.

The glycemic variability in patients with type 1 diabetes, even under intensive treatment, has a great amplitude, and has direct correlations with the classic

parameters of disease control. DAG and SDDAG can be used in the short term as predictors of the glycated hemoglobin levels in order to allow directions and earlier adaptations in clinical

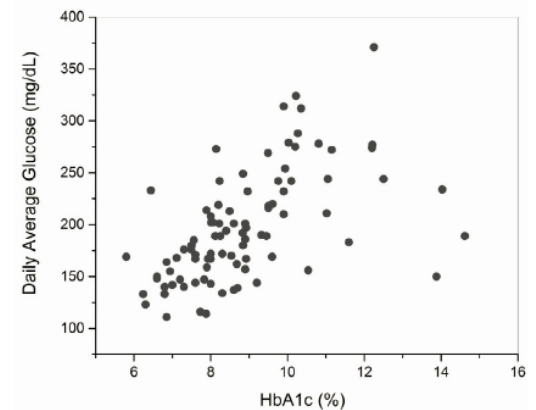


Figure 1. Dispersion diagram of the daily average glucose (DAG) and glycated hemoglobin (HbA1c) in the studied population (n=90)

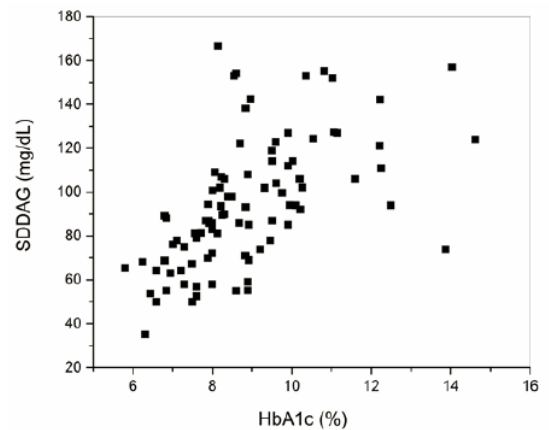


Figure 2. Dispersion diagram of the standard deviation of the daily average glucose (SDDAG) and glycated hemoglobin (HbA1c) in the studied population (n=90)

management.

Source: Rodrigues R et al. Diabetes Update. 2020. 6: 2-5. doi: 10.15761/DU.1000141

GV marker can be used in the short term as a predictor of the glycated hemoglobin levels in order to allow directions and earlier adaptations in clinical management



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