



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.

- Prevalence, Risk Factors and Outcomes Associated with Acute Kidney Injury in Patients Hospitalized for COVID-19
- Association of Gastric Bypass Surgery With Risk of Developing Diabetic Retinopathy Among Patients With Obesity and T2DM: An Observational Study
- Clinical Characterization and Frequencies of Acute and Chronic Complications in Diabetes

Should you require any specific article or medical information, please feel free to contact us at

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Looking forward to your valuable feedback

Best Regards,

Medical Team, Micro Labs Limited

Prevalence, Risk Factors and Outcomes Associated with Acute Kidney Injury in Patients Hospitalized for COVID-19

The risk factors for acute kidney injury (AKI) development in patients with diabetes hospitalized for COVID-19 have not been fully studied yet. In this study, we aimed to estimate the rate of AKI among the hospitalized population with COVID-19 and to identify the risk factors associated with AKI among patients with diabetes.

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This retrospective cohort study included 254 patients (127 with diabetes and 127 without diabetes) who were admitted for COVID-19 to a tertiary hospital in Tehran, Iran, between February and May 2020. Clinical characteristics and outcomes, radiological findings, and laboratory data, including data on AKI, hematuria, and proteinuria were recorded and analyzed. Results. Of 254 patients, 142 (55.9%) were male and the mean ($\pm$ SD) age was 65.7 years ($\pm$ 12.5). In total, 58 patients (22.8%) developed AKI during hospitalization, of whom 36 patients had diabetes ($P=0.004$); most patients (74.1%) had stage 1 or 2 AKI. Also, 8 patients (13.8%) required renal replacement therapy (RRT) after developing AKI. Regardless of diabetes status, patients who developed AKI had significantly higher mortality rates compared with patients who did not develop AKI ($P=0.002$). Hematuria and proteinuria were observed in 38.1% and 55% of patients, respectively. Multivariate analysis showed that invasive mechanical ventilation, proteinuria, HBA1c level, history of cardiovascular disease, and use of statins were independent risk factors for AKI development in patients with diabetes. Results of this study showed that AKI develops in a considerable percentage of patients with COVID-19, especially in those with diabetes, and is significantly associated with mortality.

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Table : Clinical outcomes of patients, by AKI status and AKI stage							
	Total	Stage 1	Stage 2	Stage 3	No AKI	P Value ^a	P Value ^b
Final outcome							
Recovery	41 (70.7)	17 (77.3)	18 (85.7)	6 (40.0)	165 (84.2)	0.02	0.01
Death	17 (29.3)	5 (22.7)	3 (14.3)	9 (60.0)	31 (15.8)		
Invasive mechanical ventilation							
No	48 (82.8)	21 (95.5)	19 (90.5)	8 (53.3)	179 (91.3)	0.06	0.003
Yes	10 (17.2)	1 (4.5)	2 (9.5)	7 (46.7)	17 (8.7)		

^aBetween the AKI and no AKI groups. ^bBetween the stages of AKI. AKI: acute kidney injury.

In conclusion, the results of this study showed that AKI develops in a considerable percentage of patients with COVID-19, especially in those with diabetes, and is significantly associated with mortality. Among patients with diabetes, invasive mechanical ventilation, HBA1c level, proteinuria, cardiovascular disease, and use of statins were independent risk factors for AKI development.

Source: Khalili S et al J Diabetes Res. 2021. ID 6666086:1-9
<https://doi.org/10.1155/2021/6666086>

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Association of Gastric Bypass Surgery With Risk of Developing Diabetic Retinopathy Among Patients With Obesity and T2DM: An Observational Study

This study was conducted to investigate the incidence of diabetic ocular complications in patients with type 2 diabetes after GBP compared with the incidence of diabetic ocular complications in a matched cohort of patients with obesity and diabetes who have not undergone GBP. Data from 2 nationwide registers in Sweden, the Scandinavian Obesity Surgery Registry and the National Diabetes Register, were used for this cohort study. A total of 5321 patients with diabetes from the Scandinavian Obesity Surgery Registry who had undergone GBP from January 1, 2007, to December 31, 2013, were matched with 5321 patients with diabetes from the National Diabetes Register who had not undergone GBP, based on sex, age, body mass index (BMI), and calendar time (2007-2013). Follow-up data were obtained until December 31, 2015. Statistical analysis was performed from October 5, 2018, to September 30, 2019.

The study population consisted of 5321 patients who had undergone GBP (3223 women [60.6%]; mean [SD] age, 49.0 [9.5] years) and 5321 matched controls (3395 women [63.8%]; mean [SD] age, 47.1 [11.5] years). Mean (SD) follow-up was 4.5 (1.6) years. The mean (SD) BMI and hemoglobin A1c concentration at baseline were 42.0 (5.7) and 7.6% (1.5%), respectively, in the GBP group and 40.9 (7.3) and

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7.5% (1.5%), respectively, in the control group. The mean (SD) duration of diabetes was 6.8 (6.3) years in the GBP group and 6.4 (6.4) years in the control group. The risk for new DR was reduced in the patients who underwent GBP (hazard ratio, 0.62 [95% CI, 0.49-0.78]; $P < .001$). The dominant risk factors for development of DR at baseline were diabetes duration, hemoglobin A1c concentration, use of insulin, glomerular filtration rate, and BMI.

This nationwide matched cohort study suggests that there is a reduced risk of developing new DR associated with GBP, and no evidence of an increased risk of developing DR that threatened sight or required treatment. This cohort study of 5321 patients who had undergone gastric bypass surgery and 5321 matched controls found that gastric bypass surgery was associated with a decreased risk of developing DR, and there was no evidence of increased risk for development of sight-threatening DR. The results support previous studies showing a decreased risk of developing DR after gastric bypass surgery and suggest that the DR that develops is not sight-threatening DR.

Source: Åkerblom H et al. JAMA Ophthalmol. Published online January 14, 2021. doi:10.1001/jamaophthalmol.2020.5892

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Clinical Characterization and Frequencies of Acute and Chronic Complications in Diabetes

Type 2 diabetes (T2D) is a chronic degenerative disease, and its involvement in morbidity and mortality has been progressive. Its incidence appears to be increasing, which may be due to both an increase in life expectancy and greater exposure to known risk factors related to the lifestyle. At the same time, longer survival of patient with T2D has led to a secondary increased in the prevalence of the disease. In addition, T2D is one of the three chronic diseases responsible for the most hospitalizations and costs to health institutions. The objective of the study was to identify the frequencies of chronic complications (micro- and macrovascular) in adult T2D patients of the and to determine risk factors, including the presence of overweight and obesity.

This study included 3,807,621 T2D patients with an average age of 61.1 years and a female predominance of 58.8%. A total of 46.5% of the patients presented obesity, 30% were overweight, 16.8% had arterial hypertension (HT), and 1.05% had dyslipidemia. A total of 32.6% had uncontrolled or poor glycemic control, and 29.44% had some type of comorbidity. Age and the largest number of comorbidities were consistent risk factors for the presence of complications micro- and macrovascular. Regarding hospital

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mortality, uncontrolled or poor glycemic control, HT, age and comorbidities were risk factors. It should be noted that the factor with the greatest impact was the presence of comorbidities

Description of patients with T2D and stratification according to the nutritional status classified by the BMI.

	Nutritional Status				p
	All n=3,807,621	Normal n=898,052	Overweight n=1,140,495	Obesity n=1,769,074	
	Frequencies (%)				
Age (years)*	61.1 ± 13.2	64.8 ± 13.7	61.8 ± 12.6	58.8 ± 12.9	0.001
Male sex	1,567,839 (41.2)	416,320 (46.4)	524,398 (46.0)	627,121 (35.5)	0.001
Evolution time of the T2D (months)*	59.6 ± 54.2	69.1 ± 57.6	62.1 ± 54.8	52.8 ± 51	0.001
Systemic arterial hypertension	640,499 (16.8)	92,024 (10.2)	134,755 (11.8)	413,720 (23.4)	0.001
Dyslipidemia	39,985 (1.05)	8,615 (0.96)	14,114 (1.24)	17,256 (0.98)	0.001
Poor glycemic control (A1c>7%)	1,244,152 (32.6)	270,851 (30.1)	338,780 (29.7)	634,522 (35.9)	0.001
Comorbidities	1,120,875 (29.4)	242,379 (27)	288,897 (25.3)	589,599 (33.3)	0.001
The patients were divided into 3 groups according to nutritional status measured by BMI (normal weight, overweight, and obesity). To compare quantitative variables between the groups, ANOVA with Bonferroni's test was used.					

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FactorS	Ischemic heart disease	Cerebrovascular disease	Peripheral arterial disease	Chronic kidney disease	Diabetic retinopathy	Amputation	Hospital death
Odds Ratio (Confidence interval 95%)							
Overweight /obesity	1.15 (1.13, 1.17)**	0.87 (0.89, 1.01)	1.21 (1.20, 1.22)**	0.87 (0.89, 1.01)	0.87 (0.89, 1.01)	0.87 (0.89, 1.01)	0.87 (0.89, 1.01)
A1c ≥ 7	0.93 (0.99, 1.02)	0.91 (0.99, 1.02)	1.12 (1.11, 1.13)**	0.91 (0.99, 1.02)	1.03 (1.02, 1.05)**	1.36 (1.28, 1.45)**	1.13 (1.09, 1.17)**
T2D (months)	0.99 (0.99, 1.01)	0.99 (0.99, 1.01)	0.99 (0.99, 1.01)	1.01 (1.01, 1.01)**	0.99 (0.99, 1.01)	1.01 (0.99, 1.01)	0.99 (0.99, 1.01)
Dyslipidemia	1.16 (1.05, 1.29)*	1.11 (0.95, 1.30)	1.15 (1.11, 1.20)**	0.91 (0.95, 1.30)	1.38 (1.30, 1.46)**	1.01 (0.95, 1.01)	1.01 (0.99, 1.01)
Hypertension arterial	0.87 (0.84, 1.01)	1.21 (1.16, 1.26)**	0.99 (0.99, 1.01)	1.6 (1.58, 1.62)**	1.13 (1.11, 1.15)**	1.34 (1.23, 1.45)**	1.39 (1.32, 1.45)**
Age (years)	1.01 (1.01, 1.01)**	1.02 (1.02, 1.02)*	1.02 (1.01, 1.02)**	1.02 (1.02, 1.02)**	1.02 (1.01, 1.02)**	1.01 (1.01, 1.02)**	1.02 (1.01, 1.02)**
Number of comorbidities	13.7 (13.4, 13.9)**	11.7 (11.5, 12.9)**	21.5 (21.8, 22.8)**	70.4 (69.2, 71.6)**	22.1 (21.8, 22.8)**	25.1 (24.8, 26.4)**	5.25 (5.14, 5.36)**

* p<0.05; ** p<0.001.

Multivariate logistic regression analysis to identify the factors that impact on the presence of macrovascular, microvascular and mortality alterations in patients with T2D

The risk factors that had the greatest impact on chronic complications were the number of comorbidities, age and Hypertension. Likewise, for hospital mortality.

Source: Fernández-Gárate JE et al J Diab Metab 2021; 11:858.doi: 10.35248/2155-6156.20.11.858.



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