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GLYCATED ALBUMIN AS A GLYCAEMIC MARKER IN PATIENTS WITH ADVANCED CHRONIC KIDNEY DISEASE AND ANEMIA: A PRELIMINARY REPORT

Chiara Bellia[1], Martina Zaninotto[2], Chiara Cosma[2], Luisa Agnello[1], Bruna Lo Sasso[1], Giorgia Iacolino[1], Caterina Maria Gambino[1], Mario Plebani[2], Marcello Ciaccio[1,3].

[1]Department of Biomedicine, Neurosciences and Advanced Diagnostics, University of Palermo, Italy
[2]Department of Laboratory Medicine, University-Hospital, Padova, Italy
[3]Department of Laboratory Medicine, University-Hospital, Palermo, Italy

Background: Glycemic homeostasis in diabetic chronic kidney disease (CKD) is usually monitored by HbA1c. Glycated Albumin (GA) has recently proposed as glycemic marker in subjects with CKD for its shorter half-life and its independence from altered erythrocytes turnover. The aim of this study was to evaluate the relationship between GA and glycemic measures in subjects with advanced CKD (stage 3 to 5) in relation to anemia.

Methods: eighty-one subjects with eGFR<30 ml/min/1.73m^2 were included in the study. Laboratory test results and complete medical history were collected at the enrolment. eGFR was calculated by the CKD-EPI creatinine equation. GA was measured on plasma-EDTA by quantILab® Glycated Albumin (Instrumentation Laboratory, A Werfen Company).

Results: the study included 81 subjects, 46 (57%) males, 45 (55%) diabetics. A significant association between FPG and GA (r^2= 0.41; p<0.0001), and between FPG and HbA1c (r^2= 0.42; p<0.0001) was detected in the whole study population (Figure 1). Patients with moderate/severe anemia had lower HbA1c than patients with no anemia, while both FPG and GA were comparable between the two groups (Table 1). Multivariate regression analysis showed that GA was the strongest predictor of FPG in patients with moderate/severe anemia while HbA1c didn't (r^2= 0.55; p<0.0001 for the model) (Table 2).

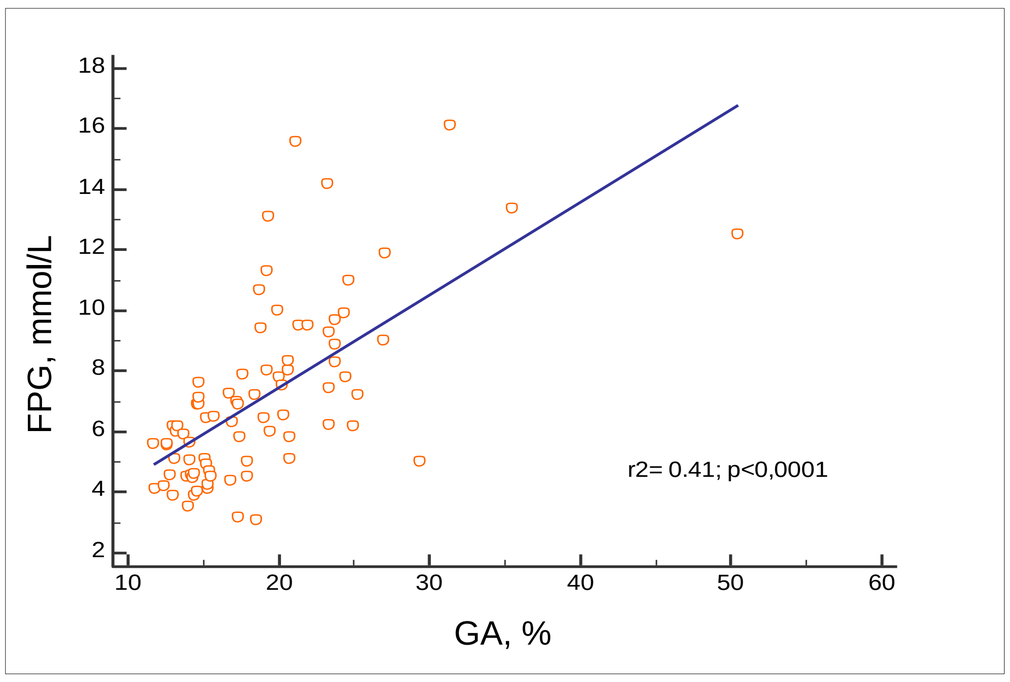

Figure 1. Univariate regression analysis of FPG and GA in the whole study population.

	Hb>110 g/L n=32	Hb≤110 g/L n=49	p
Age, years	70 ± 13	67 ± 14	0.30
Males, n (%)	20 (62)	26 (53)	0.067
Hb, g/L	127 (117 – 138)	98 (88 – 105)	<0.0001
Albumin, g/L	33 (28 – 37)	31 (27 – 36)	0.33
Diabetes, n (%)	18 (56)	27 (55)	0.11
eGFR, ml/min	22 (14 – 26)	18 (11 – 25)	0.23
FPG, mmol/L	7.2 (5.6 – 8.8)	6.1 (4.5 – 8)	0.11
GA, %	19.9 (14.1 – 23.8)	17.3 (14.5 – 20.6)	0.25
HbA1c, mmol/mol	51 (40 – 65)	41 (36 – 47)	0.001

Table 2. Comparisons between advanced CKD patients with no/mild anemia (Hb>110 g/L) and subjects with moderate/severe anemia (Hb≤110 g/L).

	FPG		
	B (SE)	β	p
GA	0.15 (0.06)	0.32	**0.019**
HbA1c	0.04 (0.02)	0.25	0.069
eGFR	0.08 (0.03)	0.24	**0.005**
Age	0.039 (0.01)	0.19	**0.029**

Table 2. Stepwise multiple regression analysis for FPG in advanced CKD patients with anemia.

Conclusions: In CKD patients with moderate/severe anemia, GA is the main predictor of FPG while HbA1c was not associated to FPG.

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