



Study of the correlation between postprandial glucose and mean blood glucose calculated from HbA1c in a diabetic population

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Introduction:

Glycemic control is a fundamental pillar in the management of diabetic disease. Numerous studies and clinical trials have shown that good (see excellent) glycemic control can prevent the development and progression of micro and macrovascular complications of diabetes. Although the measurement of HbA1c remains the absolute reference in the evaluation of glycemic control, there is no consensus if GPP is a better predictor of glycemic control when Hba1c will not be available.

Materiel and methods:

This is a cross-sectional study carried out in the laboratory of Biochemistry-Toxicology of the Military Hospital Avicenna of Marrakech over a period of 6 months , focused on 198 diabetic patients, having a report including fasting blood glucose, postprandial glucose and HbA1c; and excluded all diabetic patients who did not comply with the pre-analytical conditions and precautions, and the patients for whom the diagnosis of diabetes is not yet established, even having a glycemic balance. We used the Pearson correlation coefficient to find statistical significance.

Results:

- The average age of the patients was 54.99 with a male predominance of 53.8%.
- The distribution of patients according to the type of diabetes shows that 86% of patients have type 2 diabetes, and 14% are diabetic patients. type 1.
- In our studied population, the duration of evolution is on average of 105 months. risk factors are present in 59% of patients.
- the majority of patients suffer from obesity, 69%, 39.90% have dyslipidemia, 36.87% have hypertension, and 15.66% are smokers.



Figure!: distribution of patients according to the HbA1c value and the glycemic balance

- For degenerative complications 33.84% of patients have diabetic retinopathy, 8.59% have nephropathy. 8.59% of patients only report a history of cardiovascular events.
- Regarding the treatment 126 patients or 63.64% are under ADO, 14.65% are under insulin, and 12.63% are under ADO-insulin combination and only 9.09% are under dietary and dietary measures only.
- Biologically GPP is strongly correlated with HbA1c.
- The correlation coefficient was 0.626 ($P < 0.01$). GPP therefore has a strong association with HbA1c and with the average blood glucose. As shown in the table and the graphs above.

Tabelau: *Correlation between different parameters of glycemic control (the correlation is significant when $P < 0.01$)*

	GPP	GAJ
HbA1c	0,626	0,688
GM	0,634	0,692
GPP	-	0,686
GAJ	0,686	-

	GM	HbA1c
HbA1c	0,997	-
GM	-	0,997
GPP	0,634	0,626
GAJ	0,692	0,688

Bibliography:

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Discussion:

Diabetes has been considered for some years as a major public health problem. in Morocco, people with type 2 have 2 million adults over 30 Glycated hemoglobin is the product of the non-enzymatic, slow and irreversible binding of ose to the amine functions of globin.

In the bloodstream, glucose binds to the hemoglobin of red blood cells and thus forms glycated hemoglobin or HbA1c.

The amount of HbA1c is proportional to the level of blood glucose and the life of red blood cells. The accumulation of HbA1c in red blood cells therefore reflects the average glucose level at which these cells were exposed during their lifetime, ie about 3 months.

for the HbA1c assay methods there are the methods based on the modification of the load and the methods based on the modification of the structure. Postprandial blood glucose is measured at 90 to 120 minutes after the start of the meal. Its value depends on several factors, from the meal itself to the peripheral use of glucose, through all phases of digestion, complex hormonal secretions and the important role of the liver.

In this study, we investigated a possible correlation between GPP and mean blood glucose calculated from HbA1c in patients with type 1 and type 2 diabetes mellitus. The correlation is positive and significant. The Pearson correlation coefficient is 0.626.

GAJ is also strongly correlated with mean glucose and HbA1c. With a correlation coefficient of 0.686, GAJ is more correlated with average blood glucose than GPP.

Conclusion:

The interest we have shown in postprandial glucose in this work is related to the fact that its management must now be an integral part of the management of diabetic disease, and therefore special attention should be given to its management. monitoring and its treatment, in order to obtain an optimal level of HbA1c and thus, to prevent micro vascular and macro vascular complications of diabetes. Our study showed that GPP is strongly correlated with HbA1c and GM

