

Diabetes mellitus and Ramadan in Algeria

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ABSTRACT

Ramadan, one of the five pillars of Islam, is a holy month in Algeria where diabetes mellitus (DM) is more frequent in urban areas with a frequency which varies from 8 to 16%. DM complications are broadly as frequent as in developed countries, except for neuropathy which seems more frequent. Despite contraindications which are regularly explained to our patients and despite the flexible side of Islam toward chronic diseases, most Algerian people with DM insist on fasting. Not fasting is considered a sin and shameful. There are also other reasons put forward by diabetic persons, such as very strong religious faith, habit of fasting together with the whole family since an early age, solidarity with the family, friends, and neighbors, and finally and probably because of the desire to appear "normal" and share a festive and a spiritual atmosphere of Ramadan. As in other Muslim countries, severe hypoglycemia the main motive of hospitalizations during the holy month, ketoacidosis, dehydration, orthostatic hypotension and thrombosis are some of the complications which Algerian people with DM are exposed to when fasting.

Key words: Algeria, diabetes mellitus, Ramadan fasting

INTRODUCTION

Diabetes mellitus (DM) is a world-wide disease. Its frequency varies from a country to another according to genetics, age of the population, obesity frequency, alimentary habits and sedentary life-style.

In Algeria, as in all Muslim countries, Ramadan one of the five pillars of Islam is a holy month. Muslims all over the world fast from dawn to sunset during the whole month. That one lasts 29 or 30 days according to the lunar calendar.

Although religious and medical recommendations allow people having health problems not to fast, Algerian patients with chronic diseases, even those with renal or heart insufficiency, insist on fasting because of the strong

religious belief. These persons fast to feel and appreciate the Ramadan spiritual and festive atmosphere.

Our article aims at presenting the problem of DM in Algeria, a problem not well-known in English literature. Then, we will deal with the Algerian habits in Ramadan. Finally we will explain why Algerian people with DM fast even if they take the risk of having severe complications.

DIABETES MELLITUS IN ALGERIA

Algeria, a developing country, is 2,381,740 km². Situated in North Africa on the Mediterranean coast, it has a population of 37,367,226 inhabitants.^[1] Among them 27.8% are under 15, 67.2% are between 15-64 and 5% are older than 65.^[1]

What about DM frequency and complications in this country? And what is the attitude of Algerian people with DM toward Ramadan?

In Algeria, DM frequency varies from 1.3% in the Southern areas, where people are lean because of hard conditions of life^[2] to 8%,^[3] 14%^[4] and 16%^[5] in the Northern cities where physical activity is reduced and obesity and metabolic

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syndrome are increasing in adults^[6] and children^[7,8] because of eating disorders. Overweight and obesity in our country are positively correlated with total energy, fat and saturated fatty acid intakes.^[9]

Type 2 DM frequency is broadly similar in both sexes^[3], except for Zaoui *et al.* who found that type 2 DM is prevailing in males.^[4] In type 2 DM, family history of DM accounts for 50%.^[4] DM prevalence is significantly higher in urban than in rural areas.^[3,4] 20-50% of diabetic persons are undiagnosed.

DiabCare study in Algeria which analyzed 977 subjects (86% Type 2), aged 48.5, with a median disease duration of 10 years, showed that only 18.7% reached an HbA_{1c} <7%, even if 45% of type 2 DM were treated with insulin. In this prospective and multicentre study it was also shown that only 15.7% of type 1 DM know very well all about their disease, 38% know how to manage their hypoglycemia, 26.4% practice self-glycaemic monitoring and 53% know the recommendations about diabetic foot.^[10]

Concerning DM complications, retinopathy varies from 26.3%^[11] to 40%,^[12] nephropathy varies from 24%^[13] to 33%^[11] and neuropathy is found in a percentage of 45%.^[14] In type 1 DM, neuropathy is more severe in Algerian population than in the French one.^[15] Concerning macro-angiopathy, high blood pressure is noted in 40%^[13] to 73%,^[10] cerebral strokes vary from 2.9% to 3.37%,^[10] peripheral arterial disease is observed in 24.4%^[10] and ischemic heart disease is reported in 7%.^[13] The high prevalence of some diabetic complications is due to the poor glycaemic control as glycated hemoglobin over 8% was observed in more than 77% in both type 1 and type 2 DM.^[10]

ALGERIAN HABITS DURING RAMADAN

As for nearly one-fourth of the world's population,^[16] Ramadan is a blessed and a holly month in Algeria where Islam is practically the unique religion; 99% of the whole population are Muslim.^[17]

During the holy month, Algerian people fast every day from dawn to sunset. This means not eating, not drinking water or another liquid, not taking oral medications, not smoking, and having sex. From sunset called Maghreb to dawn called El Fedjr, people can eat and drink what they want, except alcohols and pork meat in order to get ready for the next day. Some people can have one to three meals; others who stay awake till dawn can have more. They keep snacking all night long. This third case may be explained by the fact except Ramadan, no night activities exist during

the other months, and that too many good things to eat and drink are available during this month. All what is sold and made in Ramadan is very sugary and fatty such as the various sorts of almond cakes and pastries that people take with very sweet mint tea or coffee, dried fruit...

These last years have witnessed a new food fashion; many people spend their time eating grilled lamb in the night outside. The streets are full of the smell of grilled meat!

Fasting all day means not eat and drink for 11-18 h/24 h depending on the seasons. Whatever the temperature is, everybody wants to accomplish his or her religious duty. Not fasting is considered a sin, but also as an offense against civil laws.

Fasting when summer is very hot and very moist could have many consequences on health, particularly during the first week when many changes occur: Meal time, reduction in water intake and too much perspiration, reduction in sleep and rest duration, reduced physical activity etc...

The first days can be characterized by fatigue due to hypotension and lack of sleeping, strong migraines and even a kind of aggressive behavior due to hypoglycemia. On this purpose, the Saint Koran is clear: People experiencing difficulties, such as traveling, pregnancy, suckle or menstrual period, old age, are not allowed to fast.

What about chronic diseases such as DM with complications and/or associations such as high blood pressure and other arterial diseases, kidney insufficiency, heart infarction or insufficiency, stroke, neuropathies, etc...?

ALGERIAN DIABETIC PEOPLE ATTITUDE DURING RAMADAN

Concerning DM, religious and medical recommendations are as clear as in other Muslim countries: People with high risk do not have to fast.^[18] Fasting is totally contraindicated for diabetic persons especially those who experienced a history of severe hypoglycemia and/or diabetic ketoacidosis 3 months before Ramadan. Those with severe micro-vascular complications such as renal insufficiency, severe retinopathy are also not allowed by their doctors to fast. People with advanced macro-angiopathy such as uncontrolled or resistant hypertension and those with unstable angina or stroke are not supposed to fast. Diabetic persons having infections and those who are non-compliant with diet or medications should not fast. Pregnant diabetic women, very old diabetic persons, and people who perform intense physical activity such as diabetic athletes^[18-20] do not have to fast too.

What about Algerian diabetic people's attitude toward Ramadan?

When they fast, diabetic people are generally at high risk for metabolic complications such as severe hypoglycemia, hyperglycemia, ketoacidosis, dehydration, hypovolemia and orthostatic hypotension, dyslipidemia and thrombosis especially in old people who cannot have a self-monitoring.^[18,21]

Although they are aware of these problems, the majority of people with DM insist on fasting for many reasons. Among these reasons, we can find the strong religious faith and the habit of fasting each year with the whole family. People in Algeria begin to fast since a very early age. Parents encourage their children to fast since the age of six or seven. Children who fast are praised and encouraged to keep this habit all their life. So, it seems hard to them to break this habit.

On the other hand, people with DM fast with their family and friends in the spirit of solidarity, and may feel guilty if they do not. In addition to this, they fear of being rejected by the society. Not fasting is shameful, and even if they have to take medicine, they keep it in secret so as not to shock the others: "I feel an indescribable shame when I have to eat during daylight hours, even though I am obeying my doctor's prescriptions, and my religion allows me not to fast as I am suffering from type 1 DM. The remorse haunts me although I eat in secrete even in my house" said one of our patients.

Even if they know from medical recommendations that only diabetic persons whose glycated hemoglobin is stable, free of degenerative complications and able to manage properly their disease are allowed to fast, they do fast, probably because of the strong desire to appear normal. They prefer suffering and taking the risk of having complications rather than being seen eating or drinking during the holy month.

Ramadan is a month of prayers, meetings and entertainments. For this, the majority of diabetic persons in Algeria insist on fasting, for not being excluded. When they go to mosque they meet their friends, and share their faith and prayers. By doing so, they probably forget they are different from others and feel happy and peaceful.

Meeting and inviting people and family in the evenings to offer and share the best food, soft drinks and cakes are other habits during Ramadan. Some persons with DM, who are very strict with themselves and respecting their diet, avoid parties and visits to friends and parents as everything outside home is against diet. The nice smell of the homemade bread, various food, different sort of cakes and candies,

dates, honey, a lot of exotic fruit: Everything is temptation! How to avoid temptation when you are hungry and have money saved for this purpose? The consumption of bread, meat, milk, butter, oil and sugar is at its highest rate during Ramadan. For example sugar consumption, which was about 24 kg/year/inhabitant in 2009, which means 2 kg/month,^[22] doubles in Ramadan! The more you see, the more you buy, the more you eat when hypoglycemia is guiding you!

A great number of diabetic persons, especially those who rely on medication, are convinced not to be able to resist temptation, as hypoglycemia stimulates their appetite. Great efforts are made to give food a very attractive aspect. During Ramadan people exchange recipes and gifts. Sugar, honey and butter are everywhere. How can one resist and avoid delicious food? How can you resist the smell of L'Ham Lahlou or lamb meat cooked with sugar, dried plums and lemon flavor? How to avoid zalabia [fried and crispy cakes dipped in honey mixed with orange blossom water, but one piece is the equivalent of 17 pieces of sugar or 290 Kcal!^[23]] How could one avoid Kalb El Louz or semolina and almond cake soaked in honey and orange blossom water? But, one portion of this delicious cake called "sugar bomb" is the equivalent of 87 g of sugar or 370 Kcal! These cakes are sold each day in each street corner. How to refuse an offer from friends or parents? How can you offer things and not share them with your guests? It would be impolite! And it may show that you have health problems!

So to eat or not to eat, share or not to share that is the usual dilemma for diabetic persons during Ramadan! But, eating and sharing, which means inadequate behavior for the diabetic people,^[24] usually worsen glucose control with a high risk of complications and infections. For this, hospitalizations for ketoacidosis, hyperosmolar coma and diabetes foot increase during Ramadan. To avoid this situation some patients augment their insulin or oral medication doses, but the danger of hypoglycemia: The most dangerous metabolic complication is facing them! Severe hypoglycemia is actually the most frequent cause of hospitalization during the holy month.^[25]

Although before Ramadan most of diabetic persons consult their doctors on how to adjust their treatment in order to avoid complications, they rapidly forget basic recommendations as soon as Ramadan arrives. They usually consult again after Aid El Fitr (The day which comes at the end of the holy month) also called feast of breaking the fast or the sugar feast or the sweet festival as a lot of cakes are prepared for this special day.

REFERENCES

1. Algerian Demographic profile. CIA World fact book. 21 Feb. 2013.

- Available from: <http://www.indexmundi.com> [Last accessed on 2013 Jun 10].
2. Belhadj M. The prevalence of Type 2 diabetes mellitus in Touaregs of South Algeria. *Diabetes Metab* 2003;29:298-302.
 3. Malek R, Belateche F, Laouamri S, Hamdi-Cherif M, Touabti A, Bendib W, *et al.* Prevalence of type 2 diabetes mellitus and glucose intolerance in the Setif area (Algeria). *Diabetes Metab* 2001;27:164-71.
 4. Zaoui S, Biémont C, Meguenni K. Epidemiology of diabetes in urban and rural regions of Tlemcen (Western Algeria). *Sante* 2007;17:15-21.
 5. Latifa BH, Kaouel M. Cardiovascular risk factors in Tlemcen (Algeria). *Sante* 2007;17:153-8.
 6. Kocēir EA, Benbaïbeche H, Haffaf el M, Kacimi G, Oudjit B. Metabolic syndrome and hormonal interaction in obese and type 2 diabetic Algerian subjects: The behavior eating disorder impact. *Ann Biol Clin (Paris)* 2009;67:315-23.
 7. Taleb S, Oulamara H, Agli AN. Prevalence of overweight and obesity in schoolchildren in Tebessa (Algeria) between 1998 and 2005. *East Mediterr Health J* 2010;16:746-51.
 8. Oulamara H, Agli AN, Frelut ML. Changes in the prevalence of overweight, obesity and thinness in Algerian children between 2001 and 2006. *Int J Pediatr Obes* 2009;4:411-3.
 9. Saker M, Merzouk H, Merzouk SA, Ahmed SB, Narce M. Predictive factors of obesity and their relationships to dietary intake in schoolchildren in Western Algeria. *Maedica (Buchar)* 2011;6:90-9.
 10. Belhadj M, Malek R, Boudiba A, Lezzar E, Roula D, Sekkal F, *et al.* *DiabCare Algérie. Médecine des Maladies Métaboliques* 2011;5 Suppl 1:S24-8.
 11. Zenati N, Mezghrani K, Nebti N, Baghous H, Youcef SH, Ghermoul H, *et al.* Diabetic retinopathy and nephropathy: Which correlation? The 9th Congress of Maghreb Federation of Endocrinology and Diabetology, Algiers 23-25 Nov. 2012.
 12. Boumeziane L, Chentli F, Oudjit B, Ould-Kablia S, Cheikh A, Lebbad S, *et al.* Diabetic retinopathy in type 2 diabetes mellitus: Epidemiological aspects, correlation with high blood pressure and albuminuria. *Rev Algérienne Santé Mil* 1995;24:97-103.
 13. Mimouni S, Baghous H, Boudiba A. Epidemiological study of cardiovascular complications in diabetes mellitus. The 9th Congress of Maghreb Federation of Endocrinology and Diabetology, Algiers 23-25 Nov. 2012.
 14. Boudaoud AA, Aouiche S, Ouerdene K, Frioui M, Ragguem A, Boudiba A. Diabetic neuropathy: Results of DN4 questionnaire in 400 patients. 9th Congress of Maghreb Federation of Endocrinology and Diabetology, Algiers 23-25 Nov. 2012.
 15. Vague P, Brunetti O, Valet AM, Attali I, Lassmann-Vague V, Vialettes B. Increased prevalence of neurologic complications among insulin dependent diabetic patients of Algerian origin. *Diabetes Metab* 1988;14:706-11.
 16. Huda. Statistics about the Muslim Population of the World. Available from: <http://islam.about.com> [Last accessed on 2013 Jun 10].
 17. Tristam P. Algeria: Country Profile. Available from: <http://middleeast.about.com>. [Last accessed on 2013 Jun 10].
 18. Al-Arouj M, Assaad-Khalil S, Buse J, Fahdil I, Fahmy M, Hafez S, *et al.* Recommendations for management of diabetes during Ramadan: Update 2010. *Diabetes Care* 2010;33:1895-902.
 19. Kobeissy A, Zantout MS, Azar ST. Suggested insulin regimens for patients with type 1 diabetes mellitus who wish to fast during the month of Ramadan. *Clin Ther* 2008;30:1408-15.
 20. Azizi F. Islamic fasting and health. *Ann Nutr Metab* 2010;56:273-82.
 21. Khaled BM, Bendahmane M, Belbraouet S. Ramadan fasting induces modifications of certain serum components in obese women with type 2 diabetes. *Saudi Med J* 2006;27:23-6.
 22. Mission Economique-UBIFRANCE en Algérie; La filière agroalimentaire en Algérie octobre 2009 © MINEIE – DGTPPE-UBIFRANCE. Available from: <http://www.financesmediterranee.com>. [Last accessed on 2013 Jun 10].
 23. Oulhadj F. L'avis de la diététicienne. Gérer son alimentation pendant le ramadan. Available from: <http://www.afd.asso.fr>. [Last accessed on 2013 Jun 10].
 24. Halimi S, Lévy M, Amghar H. Clinical case: Beliefs, Ramadan and diabetes mellitus. *Ann Endocrinol (Paris)* 2004;65 Suppl 1:S68-73.
 25. Salti I, Bénard E, Detournay B, Bianchi-Biscay M, Le Brigand C, Voinet C, *et al.* A population-based study of diabetes and its characteristics during the fasting month of Ramadan in 13 countries: Results of the epidemiology of diabetes and Ramadan 1422/2001 (EPIDIAR) study. *Diabetes Care* 2004;27:2306-11.

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