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Fasting in epileptic patients: What are the clinical and neurobiological data on this subject

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Abstract

According to the WHO, health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

In this respect, I would like to remind you that the practitioner, especially the neurologist, must be holistic in his therapeutic approach in order to ensure a global care of the patient.

This being said, the epileptic patient deserves to be listened to in all aspects of his life (profession, leisure, sexuality, reproduction... etc.), especially those related to his beliefs and cultures, whose infringement is certainly a source of frustrations, fears and seizure-generating emotions, thus jeopardizing the correct management of his illness. The cult is therefore an essential part of these important aspects for the epileptic patient in general and the Muslim in particular.

Keywords: Epileptic patients, clinical and neurobiological data, seizure-generating

Introduction

However, Ramadan is a period of fasting that is repeated annually and takes place in the ninth month of the Islamic calendar ^[1].

Fasting is obligatory for all Muslims in good health. Fasting extends from dawn to sunset. The period of fasting varies from season to season and from country to country but always from dawn to sunset or by estimating the duration. During the summer months, the fasting period can last up to 16 hours or more, while during the winter months it is up to 10-12 hours. The variation in day length in summer means that at temperate altitudes, fasting can last up to 20 hours ^[1].

During the fasting period, adults are not allowed to receive food and water. During Ramadan, people who fast tend to change their eating habits and the type of food they eat ^[12] hence the concern of caregivers, patients and their relatives about the management of epilepsy in this period.

Epilepsy represents the second most common neurological disease in the world with 70 million epilepsy patients worldwide ^[3, 4]. It is most common in children and the elderly ^[5]. Epilepsy is a neurological condition that can be suffered at any age. Almost 80% live in low- and middle-income countries. In black Africa, the median of epilepsy has been estimated to be 15 cases per thousand population. Epilepsy has long been considered a spiritual disease; since 2000 BC. In the 19th century, with the emergence of a new medical discipline, Neurology, epilepsy was considered as a brain disease which is different from mental illness, i.e. madness ^[6]. Epilepsy affects all races and all continents, regardless of religion.

The Muslim religion, Islam, has five pillars of which the fasting of Ramadan is one. The youth exists in the form of optional meritorious acts but especially the obligatory form taking place during the month of Ramadan.

The interest of this topic is to examine the impact of fasting during Ramadan on seizure control and quality of life in adult epilepsy patients ^[7].

Nutritionally, caloric restriction and intermittent fasting appear to have a variety of health benefits, including improved immune system function. In addition, there is evidence of improved cognitive function and even a reduction in seizure episodes in some epilepsy patients. The time-restricted diet has an anticonvulsant effect and this restrictive diet may promote changes in energy metabolism ^[8].

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Although tissues preferentially use carbohydrate energy rather than fat and protein energy, the amount of carbohydrate stored in the body is only a few hundred grams (mainly glycogen in the liver and muscles) and it can provide the energy needed for body function [9,10].

Diet control is one of the oldest and most common forms of treatment for many diseases. Epilepsy is no exception; for centuries, physicians have treated epilepsy with dietary changes and restrictions. The use of fasting in the treatment of epilepsy dates back to the time of the British Empire [7].

Ramadan does not dramatically affect lipid, carbohydrate, and protein metabolism, nor does it affect average daily hormone and protein levels. An increase in serum urea and uric acid levels has been frequently reported, which could be attributed to the relative "dehydration" during fasting, but some changes, such as an increase in HDL, apoprotein A1, and a decrease in LDL, could be beneficial for the cardiovascular system [9].

A survey by Rehab Magdy *et al.*, 2020 that included three hundred and twenty-one (321) Muslim patients [11] with active epilepsy and median age of 33 years, (some patients had more than one type of seizure). This was a prospective observational study of Muslim patients with active epilepsy who intended to fast during Ramadan of the year 2019, with an average of 16 hours of fasting per day. Seizure frequency for each seizure type was monitored for three months, one month before Ramadan (Shaaban), during Ramadan, and one month after (Shawwal), after ensuring medication adherence. During Ramadan, 86 of 224 patients with focal seizures, 17 of 38 patients with myoclonic seizures, and 6 of 10 patients with absence seizures. Patients with absence seizures showed a reduction $\geq 50\%$. In Shawaal, this improvement continued in 83, 13 and 4 patients with focal, myoclonic, and absence seizures, respectively. Focal and myoclonic seizures were significantly improved in Ramadan and Shawaal compared with Shaaban. However, absence seizures were significantly improved only during Ramadan compared to Shaaban. The frequency of generalized tonic-clonic seizures did not differ significantly between the three months.

On the other hand, another study [12] by the same Egyptian team included 430 patients. The majority of patients (75.58%) completed the Ramadan fast without seizures. Maximum seizure freedom before Ramadan and sleep hours were identified as independent predictors of successful Ramadan fasting, using multivariate analysis.

Khalid Alqadi *et al.*, 2020 [7] had found that seizures occurring before fasting accounted for 35.5% of all seizures. Multilinear regression analysis revealed a significant decrease in seizures by 21% during the fasting month compared to baseline (adjusted coefficient=0.79, $p<0.01$, 95% confidence interval (CI): 0.61-0.98, $R^2=0.81$) and by 29% during the post-fasting month compared to baseline (adjusted coefficient=0.71, $p<0.01$).

However, the neurologist must reassure patients and their parents in order to optimize lifestyle and compliance with antiepileptic drugs. The following factors according to A. Mahmood *et al.* (2020) constitute a means of assessing the high or low risk in the epileptic patient wishing to fast during the month of Ramadan, it is therefore the staging of the risk of epileptic patients and suitability for fasting in Ramadan [13].

Low risk factors for fasting in epilepsy (A. Mahmood *et al.* (2020).

- Normal MRI.
- Normal EEG.
- 1 to 2 Seizures throughout adult life.
- Maintained on monotherapy due to low epileptic load.
- Moderate dose.

High risk factors for fasting in epilepsy (A. Mahmood *et al.* (2020) Abnormal MRI

- Abnormal EEG.
- Frequent crises.
- Continued use of combination medications due to poorly controlled seizures in the past.
- Previous epilepsies.
- Comorbid conditions such as hypertension, heart failure, malignancy, diabetes.
- Seniors.

These data from the literature show that Ramadan fasting is indeed possible for epileptic patients and that it seems beneficial for them in the light of the results of different scientific series and cohorts. However, hygienic and dietary advice must be given to these patients, especially concerning sleep organization and eating habits.

Furthermore, the neurologist must make the epileptic patient aware of the need to consult his or her nearest physician as soon as the slightest discomfort is noticed during the fasting state in order to discuss as a team (neurologist, patient, parents and scholar) the possibility of continuing the fasting, its temporary or definitive cessation on a case-by-case basis according to age, comorbidities, the patient's clinical condition and electrophysiological data.

Large-scale multicenter studies are needed to better understand this important facet of epileptology, which is of great importance to epilepsy patients and which must also attract the attention of epileptologists and neurologists.

Conflict of interest: None

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