

ARTICLE

Ramadan Fasting in Children with Epilepsy: An Exploratory Study

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Abstract

Objective: To observe seizure occurrence during the month of Ramadan among fasting Muslim children with epilepsy who are on treatment with antiepileptic drugs (AEDs). **Methods:** Prospective observational study of pediatric patients with epilepsy intending to fast in Ramadan of the year 2011 and 2012. Patients identified through pediatric neurology clinic visits in the 3 months prior to Ramadan were asked whether they plan to fast Ramadan or not. They were counseled on medication compliance, medication rescheduling, seizure precautions, and management of breakthrough seizures. Patients were advised against fasting if their epilepsy was not controlled. The outcome was assessed by verbal report on their follow up visit after Ramadan. **Results:** 20 patients (13 males, 7 females, with age range of 7-14 years, median age 10 years) with 19 reported patient fasting cycles were identified (2 patients fasted on both years, 3 patients did not fast). There were only 2 reported seizures in 19 patient fasting cycles. All

patients reported compliance with the medication schedule as directed in the pre-Ramadan visit. There were no reported adverse effects to the new schedule of medication administration. **Conclusions:** Fasting Ramadan in children with epilepsy appears to be feasible with proper physician guidance and patient compliance. Anticipatory guidance is essential in caring for children with epilepsy who intend to participate in religious based activities that may potentially modify their risk for seizures.

Keywords: Children with epilepsy (CWE), Antiepileptic drug (AED), Ramadan, Fasting.

Introduction

Religious fasting is ordained upon post-pubertal Muslims during the month of Ramadan; the 9th months of the lunar calendar. When fasting from dawn till sunset everyday of Ramadan, Muslims refrain from any enteral intake of food, drink, and other alike substances (i.e. medicines) in

addition to refraining from sexual intercourse. Oral intake of medications is therefore incompatible with fasting, in which case a Muslim in need of taking medications for an illness may either break the fast and make up for those days later on if able, or reschedule the prescribed medications so that they are taken during the period of breaking the fast (i.e. between sunset and dawn of the following day). The shortest inter-meal interval possible during a fasting day is from *Iftar* meal (at sunset) till *Suhoor* meal (just pre-dawn). While pre-pubertal Muslim children are not obliged to fast yet, it is a common practice for them to “train” to fast as much as they are physically able, which frequently means fasting the whole period from dawn till sunset before they are actually obliged to do so. This situation poses the same challenges of medication administration rescheduling and compliance that are faced by adult Muslims under treatment for a variety of medical conditions. As a matter of fact, adult patients have been reported to stop, or alter the time and dosing of their medications arbitrarily during their Ramadan fasting resulting in potentially serious harm (1,2).

Physicians have a critical role in advising their patients on whether it is medically safe to fast or not, as well as making necessary changes to their medication schedule or dosing to optimize compliance and minimize the risk of fasting related seizures due to changes in AED pharmacokinetics. No published studies addressing the occurrence of seizures or the impact of AED scheduling adjustments during Ramadan fasting in pre-pubertal CWE were found. In the author’s anecdotal experience, individual CWE have been successfully counseled through fasting Ramadan prior to this study with no major problems (unpublished data), and hence, this observational follow up is designed in the hope of stimulating larger scale studies while providing some guidance from real life practice.

Patients and Methods

Settings

This is a prospective observational follow up of pediatric patients with epilepsy already on treatment with one or more AED with intention to fast in Ramadan of the year 2011 and 2012. The study spanned 2 Ramadan months in two consecutive years, with every fasting patient per month of Ramadan termed a “patient fasting cycle”. This definition allowed the author to assess the correlation between actual fasting and seizure control rather than mere intent to fast. It also allowed to count more than one cycle in an individual who fasted on both years. The study outcome

was defined as the occurrence of seizures during a patient fasting cycle. This was assessed through by verbal report on the patient’s follow up visit after Ramadan. The fasting duration in the month of Ramadan in both years in the UAE was about 15 hours.

Patients’ characteristics

20 patients met the inclusion criteria (see below). They were 13 males and 7 females (ratio 2:1). Their age ranged between 7-14 years, with a median age of 10 years. There were a total of 19 reported patient fasting cycles (2 patients fasted on both years, 3 patients who initially indicated intention to fast did not actually fast).

Protocol

Inclusion criteria were (i) pre-pubertal child with epilepsy, (ii) on treatment with one or more AED, (iii) Muslim patients planning to fast Ramadan. Patients were prospectively identified based on these criteria through pre-scheduled pediatric neurology clinic visits in the 3 months prior to the month of Ramadan. Children and their parents were asked whether they planned to fast during the month of Ramadan or not. If they answered yes, their seizure control was reviewed, and they were advised against fasting if their epilepsy was not controlled. For the purpose of this study, the patient’s epilepsy was considered uncontrolled if they had any seizure in the 3 months prior to the month of fasting. If the patient had no seizures in the 3 months prior to the month of fasting, their antiepileptic drug regimen was reviewed, and they were counseled on medication compliance, medication scheduling around the fasting time, seizure precautions with emphasis on social behaviors that are prevalent during the months of Ramadan (i.e. staying up late), and management of breakthrough seizures. The only change to the patient’s antiepileptic drug therapy was in the dosing schedule; those on twice daily medication were advised to take their medications at *iftar* meal (sunset) and *suhor* meal (just before dawn) in keeping with the restrictions imposed by the fasting hours. Those on three times daily medications were advised alike, with the third dose given at midnight.

Results

Seizure classification and therapy

The patients seizure classification according to their medical record was as follows: 5 patients (25%) with generalized epilepsy, 13 patients (65%) with partial epilepsy, and 2 patients (10%) with epilepsy not otherwise classified. The percentage of polytherapy was 5.3% (1/ 19) of all patient

fasting cycles. The percentage of three times daily medication schedule was 5.3%, all other patients were on two times daily medication schedule prior to fasting and during all patient fasting cycles.

Frequency of seizures during Ramadan

Two seizures were reported in all patients. One during a patient fasting cycles (5.3% of patient fasting cycles) and the other in a patient who did not fast according to medical advice due to uncontrolled epilepsy. All patients reported compliance with the medication schedule as directed in the pre-Ramadan visit. There were no reported adverse effects to the new schedule of medication administration.

Patients attitudes and practices

Three patients fasted against medical advice, none reported having any seizures during their fast. Of the two patients who experienced seizures, one (patient A) did not fast and admitted to have missed her medication dose on the day of her seizure. The second patient (patient B) had controlled epilepsy but was on a pre-planned weaning of his monotherapy AED after 2 years of seizure freedom. Of interest, 4 out of 7 patients who were counseled against fasting fasted against medical advice, only 1 (patient A) reported experiencing a seizure.

Discussion

The study is, to the best of the author's knowledge, a first of its kind assessing the occurrence of seizures in Muslim CWE fasting the month of Ramadan while on antiepileptic drug therapy. The data from this study show a very small percentage of seizure occurrence in this cohort (5.3% of all patient fasting cycles). There are many aspects that are worth considering when examining the outcome. Firstly, the very low occurrence in this study needs to be interpreted in context of the small number of subjects, as well as the characteristics of the patients with epilepsy. The majority of these patients had partial epilepsy (65%), were on monotherapy (94.7%), on twice daily medication schedule prior to fasting (94.7%), and had controlled epilepsy. These characteristics may indicate an inherently low risk of seizure occurrence in these patients, and would need to be validated in a larger study. Secondly, is the fact that no drug level monitoring was carried out to assess the impact of changing the medication dosing schedules on the pharmacokinetics of the AEDs. This was due to the study design being observational only. However, data from previous studies in adults are somewhat conflicting in this regard; Gomceli et al found that 76.3% of their patients who

had seizures during Ramadan (n=38) had changed their drug regimens to *iftar* and *Suhoor* (3). They hypothesized that such a change in medication schedule could alter plasma concentrations of AEDs. Khattab et al have, on the other hand, demonstrated the safety of fasting in adult patients with epilepsy treated with carbamazepine after changing the same total daily dose from three times daily to twice daily (4). They have actually demonstrated that carbamazepine serum levels remained within therapeutic range during Ramadan and that fasting patients remained seizure free (4). The common emphasis among these seemingly conflicting findings is on the relevance of the overall stability of AED pharmacokinetics to maintenance of seizure control in adult patients with epilepsy (5). The third aspect in this study, is that physicians must be cognizant of the wide scope of social aspects of CWE that may impact their epilepsy control and their quality of life. Muslim Patients grow into their religious obligations and social norms without much questioning on their side or understanding of the potential impact of such practices on their health control in case of chronic disease like epilepsy. Nadkarni et al recently assessed the quality of life of 102 CWE by quality of life in childhood epilepsy (QOLCE) and conclude that CWE have a relatively compromised quality of life, emphasizing the need for a more comprehensive approach to managing CWE that goes beyond seizure control (6). Galletti et al stress the importance of well established physician-patient dialogue in providing a comprehensive management scheme that supports an acceptable quality of life and avoids unnecessary day life limitations (7). Hence, it is the author's opinion that active inquiry and counseling about potential risks that fasting poses to epilepsy control, as well as appropriate physician-guided adjustments recommended for disease management during Ramadan enables and empowers CWE towards leading as normal a life style as possible, without feeling the stigma of being less able than their peers as a result of their epilepsy. Finally, despite the small size of the study, the findings suggest that certain patient characteristics and careful patient selection may indeed provide sound basis for counseling patients on the risk of seizures during Ramadan fasting. Such counseling should be considered a valuable opportunity to stress patient compliance while expressing support through a comprehensive plan of care that goes beyond the traditional aim of seizure control.

The study has several limitations; firstly, the number is small since it was an exploratory study, but larger numbers are needed to be more confident about the outcome date.

Secondly, there was no control group since it would be unethical to ask those who intend to fast on religious basis not to do so, but this could have been overcome by including a control of CWE who did not plan to fast. Thirdly, the study was limited to one geographic locality in 2 consecutive years which limits the ability to assess the impact of a variety of fasting circumstances related to the length of fasting and climate conditions on seizure control as outlined by Al-Mahdawi in his letter on epilepsy and fasting (8). Finally, this study did not evaluate the impact of different AEDs pharmacokinetics, such as half life and extended release formulations, on the primary outcome. These limitations should be considered in future studies on the matter of fasting and epilepsy.

In conclusion, Muslim children with epilepsy can be actively counseled and guided on the appropriateness of fasting Ramadan if so desired. Suggested characteristics of CWE with low risk for seizure occurrence during Ramadan fasting include a history of controlled epilepsy, AED monotherapy and a classification of partial seizures, but further large scale multicenter studies to confirm this observation are needed (9).

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