

The Impact of Eid Al-Fitr on Serum Uric Acid and Arthritis among Patients with Gout

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Eid Al-Fitr (EAF) is a religious holiday in the Muslim faith. It marks the end of the fasting period during the holy month of Ramadan. EAF lasts 3 days and is usually celebrated with large quantities of food, including meats and different types of proteins. During the month of Ramadan, Muslims refrain from consuming food and drink from dawn until evening. These types of extreme changes in intake habits – before and during EAF – might have a major impact on the homeostasis of serum uric acid (UA) levels and potentially on gouty arthritic attacks. There are few studies on the impact of EAF on morbidity in general, and none on patients with gout. In one study from Kuwait, an increase in the incidence of acute myocardial infarction during EAF was observed [1].

In this study, we prospectively evaluated the impact of EAF occurring during the summer on different laboratory and clinical parameters at the Nazareth Hospital, Nazareth, Israel among non-selected patients with gout who fasted during Ramadan. After patient consent, demographic and clinical parameters were documented, including age, duration of gout, date of last gouty attack and number of gouty arthritic attacks during the last year. Blood tests for urea, creatinine and uric acid levels, as well as body weight, were obtained during the last few days of Ramadan and repeated at the end of EAF. All lab tests were conducted at the same lab and patients were blinded to the results of the tests. At the time of each blood test (at the end of Ramadan and at the end of EAF) patients were asked about their treatment and medication dosages of allopurinol, colchicine and other urate-lowering agents during Ramadan and during EAF. They were also questioned about symptoms and signs of gouty arthritic attacks and adherence to a low purine diet during Ramadan. Adherence to a low purine diet was graded from 0–3, where 0 meant no adherence at all and 3 indicated full adherence. Patients were also contacted 4 to 5 days after the end of EAF. They were asked about symptoms or signs suggestive of a

gouty arthritic attack. In cases of suspicion of arthritic gouty attack, the primary investigator would verify the complaint and decide whether the episode was an arthritic gouty attack. Six randomly chosen patients were asked about the exact menu that was served during their EAF festivities.

We recruited 26 patients, but only 22 completed the study. Twenty patients (90.91%) were male [Table 1]. Mean age of the patients was 59.4 ± 13.2 years. We found that 33% of the patients were fully adherent to low purine diet and 41% did not comply at all. During the month of Ramadan, 15 patients (68.18%) were treated with allopurinol and 17 (77.27%) with colchicine (5 were treated with allopurinol alone, 7 with just colchicine, and 10 with both allopurinol and colchicine). During EAF, 16 patients (72.72%) were treated with allopurinol and 17 (77.27%) with colchicine (5 were treated with allopurinol alone, 6 with just colchicine, and 11 with both allopurinol and colchicine).

The typical menu during EAF included soft drinks, white bread, rice, chicken and meats, fried or cooked potatoes, mashed chickpeas, fresh vegetable salads, canned vegetables, fruits, fruit juices, chocolate and sweets, dried dates, ground nuts and almonds.

There was no significant difference in UA levels between the end of EAF (7.4 ± 1.75 mg/dl, range 4.3–10.2) and the time period before EAF (7.1 ± 1.86, range 4.1–10.1, *P* = 0.204), but

Table 1. Epidemiologic and clinical parameters of the patients

Parameter	Results
Age* (year)	59.4 ± 13.2, 35–85
Gender (male:female)	20:2
Duration of gout (year)*	8.5 ± 8.1, 1–30
Time of last gouty attack (month)*	3.5 ± 5.4, 0.6–15
No. of attacks during the last year*	0.5 ± 0.8, 0–2
Nephrolithiasis	1
Adherence to LPD during Ramadan*	1.48 ± 1.04, 0–3
Patients treated with allopurinol during Ramadan	15 (68.18%)
Patients treated with allopurinol during EAF	16 (72.72%)
Allopurinol daily dose during Ramadan*†	191 ± 90, 50–300
Allopurinol daily dose during EAF*†	191.5 ± 91, 50–300
Patients treated with colchicine during Ramadan	17 (77.27%)
Patients treated with colchicine during EAF	17 (77.27%)
Colchicine daily dose during Ramadan*†	0.69 ± 0.25
Colchicine daily dose during EAF*†	0.69 ± 0.25

*mean ± standard deviation and range, †in mg
EAF = Eid Al-Fitr, LPD = low purine diet

there was a significant increase in weight gain (96.76 ± 16.4 kg, range 70.5–135 kg, vs. 94.99 ± 16.5 , range 69–135 kg, $P = 0.033$) [Table 2]. None of the patients developed arthritic gouty attack during Ramadan nor during the span of the study period. These results indicate that EAF does not seem to be a risk factor for a significant increase in serum UA and/or the development of gouty arthritis in Muslim patients in Israel who fast during Ramadan. The slight increase in UA during EAF was despite the decrease in creatinine and urea levels, supporting the conclusion that the increase in food intake during EAF led to an increase in mean UA levels while the liberal fluid intake and hydration led to the decrease in mean serum

creatinine and urea levels, and prevented higher increase in serum UA levels. It could also be that a larger sample might have shown results of a significant increase of serum uric acid levels following EAF.

The menus served during EAF are diverse in terms of purine content, as some foods are considered purine-rich (e.g., meat and peas) or moderate-low (e.g., potatoes, bread, cakes, nuts) and other are purine-free (e.g., some fresh vegetables, fruits, fruit juices and soft drinks).

We cannot generalize the results of our study to neighboring Arab countries or to remote areas because the standard of living in Israel is generally higher than those areas and the weather is different. Differences in standards of living can be expected to affect the amount and type of food intake during EAF.

Table 2. Serum creatinine, urea, UA and weight values prior to and immediately following EAF

	Timing	Prior to EAF (mean \pm SD, range)	Following EAF (mean \pm SD, range)	P value
Parameter	Uric acid (mg/dl)	7.1 ± 1.86 , 4.1–10.1	7.4 ± 1.75 , 4.3–10.2	0.204
	Creatinine (mg/dl)	1.42 ± 1.19 , 0.6–6.09	1.40 ± 1.09 , 0.55–5.49	0.387
	Urea	34.1 ± 24.1 , 9–86	31.7 ± 21.8 , 6–74	0.247
	Weight (kg)	94.99 ± 16.5 , 69–135	96.76 ± 16.4 , 70.5–135	0.033

SD = standard deviation

EAF = Eid Al-Fitr

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Capsule

Double duty for mammary stem cell niche

The stem cell niche is a complex local signaling microenvironment that regulates stem cell activity for tissue and organ maintenance and regeneration. As well as responding locally, during puberty, the mammary gland stem cell niche also responds to systemic hormonal signals. Zhao et al. have found that Gli2, a transcriptional effector of Hedgehog signaling, coordinates the niche-signaling program and

activates expression of receptors for the mammatrophic hormones estrogen and growth hormone throughout the mammary gland (see the Perspective by Robertson). Disease may result not only from stem cell defects, but also from dysregulation of the microenvironment.

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Eitan Israeli

Capsule

A transcription factor drug for asthma

In patients with asthma too many goblet cells in the lung differentiate and produce excess mucus in response to inflammatory signals. In mice sensitized to house dust mite allergens, Sun et al. characterized a small molecule called RCM-1 that inhibits the activity of FOXM1, a transcription factor that is critical for airway goblet cell differentiation. RCM-

1 also prevented airway hyper-reactivity and inflammation and improved lung function in these mice. This molecule may have applications for other chronic pulmonary disorders associated with mucus hyper-secretion.

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“Some people feel the rain, others just get wet”

Bob Marley (1945-1941), Jamaican singer-songwriter, musician and guitarist known for blending mostly reggae, ska and rocksteady in his compositions.