

Short Report

Ramadan fasting and inflammatory bowel disease

Hamid Tavakkoli,¹ Saeid Haghdani,² Mohammad Hassan Emami,¹
Haideh Adilipour,³ Mahbobeh Tavakkoli,³ Monireh Tavakkoli³

¹Department of Gastroenterology, Al-Zahra Hospital; ²School of Medicine, Isfahan University of Medical Science; and ³Poursina Hakim Research Institute, Isfahan, Iran

Ramadan fasting may induce changes in gastrointestinal physiology. The effect of this fasting on inflammatory bowel disease (IBD) is not known. We conducted a cohort study in the month of Ramadan in 2006 to assess the effect of Ramadan fasting on IBD. Sixty patients with IBD, who were in remission and undertook fasting according to their own free will underwent assessment of quality-of-life (QoL) parameters, psychological state and the severity of symptoms before and after Ramadan. There was no correlation between the number of fasting days and the severity of the disease, QoL and psychological state of the patients. QoL did not change after Ramadan. Younger patients with ulcerative colitis (UC) fasted for a greater number of days ($p=0.01$) compared to older patients. The mean score of anxiety, using a modified version of the Hospital Anxiety and Depression Scale was 12.7 (6.0) before Ramadan in women with UC, and decreased to 9.8 (4.4) after fasting ($p=0.026$). Men with UC had a mean score of colitis activity index of 3.5 before Ramadan, which decreased to 1.7 after fasting ($p=0.008$). It appears that Ramadan fasting does not impose serious risks on patients with IBD.

Indian J Gastroenterol 2008 Nov-Dec; 27: 239-241.

Ramadan is the ninth month of the Islamic lunar calendar. During the month of Ramadan, devotees take two meals, one before sunrise (Sohour) and the other shortly after sunset (Iftar).¹ Ramadan fasting is not merely restricted to not eating and drinking, but also includes changes in sleeping habits and alterations in the schedule of drug intake.² Therefore, from a physiological standpoint, one can assume that changes that occur during Islamic fasting are distinct from regular voluntary or experimental fasting.³

Inflammatory bowel disease (IBD) is characterized by chronic intestinal inflammation. Although there is some evidence on the effect of Ramadan fasting on gastrointestinal functions,³ the effect of Ramadan fasting on the clinical course of IBD has not been assessed.

Methods

A short cohort study was done in the month of Ramadan between 25 September 2006 and 24 October 2006. IBD was defined using the Leonard Jones criteria.⁴ Patients were excluded from the study if they had any of the following features: moderate to severe colitis in the induction phase of therapy, past history of perforation of the bowel or megacolon, active bacterial, fungal or viral infection, cytotoxic treatment within the preceding 2 weeks, elevated serum concentrations of hepatic enzymes (>3 times normal), hyperbilirubinemia (>2 times normal), renal dysfunction (serum creatinine $>33\%$ above upper limit of normal), serum cholesterol concentration of <120

mg per dL and, presence of other systemic diseases, such as diabetes, cardiovascular diseases, and primary sclerosing cholangitis. Patients on immunomodulators (such as azathioprine) and corticosteroid were not excluded from the study. One week before Ramadan, we contacted all patients who were registered in the IBD registry at Poursina Hakim clinic in Isfahan, Iran. An internist and two general practitioners interviewed the patients and assessed the disease severity and QoL through physician-administered and self-administered questionnaires during one week, before and after Ramadan. All patients were allowed to fast according to their will. However, the gastroenterologists advised patients not to fast if they had experienced previous harmful effects from fasting. At the end of Ramadan, patients were asked to note the number of days they fasted and any changes in their symptoms from fasting.

IBDQ-9 (inflammatory bowel disease questionnaire) was used to measure the disease impact on health-related QoL parameters.⁵ The criteria used to monitor severity of disease were the UC activity index (CAI)⁶, and the Crohn's disease (CD) activity index (CDAI).⁷ The Iranian version of the short-form health survey (SF-36) was used in health-related QoL assessment.⁸ The Iranian version of the hospital anxiety and depression scale (HADS) was used as part of the assessment.⁹ Informed consent was obtained from all patients.

Data were analyzed using SPSS version 13 (Chicago,

IL, USA). Stepwise multiple regression analyses with *p* in and out of 0.05 and 0.1, respectively, were performed to identify variables predicting the number of fasting days during Ramadan. Multiple logistic regressions were done with the same independent variables entered into multiple regression analyses with dependent variable as fasting. The level of significance was set at *p*<0.05.

Results

The study sample included 60 patients (mean age 35.5 [15] years; 27 men) with IBD. Seventeen patients (8 men) had Crohn's disease, 43 (19 men) had UC; 26 patients did not fast, 5 patients fasted for all 30 days and 29 patients fasted for 1-29 days.

The mean of pre- and post-Ramadan measurements are given in Table 1. The differences were not significant in either group. The mean score of anxiety was lower after Ramadan in UC patients; anxiety was reduced in women with UC (12.7 *versus* 9.8, before *versus* after fasting, respectively; *p*=0.026) but not in men (8 *versus* 7.5, respectively; *p*=0.55).

In UC patients, the mean score of CAI was 2.97 (2.33) before Ramadan, which decreased to 1.88 (1.67) after Ramadan (*p*=0.005). CAI decreased only in UC male patients (3.5 *versus* 1.7, before *versus* after fasting, respectively; *p*=0.008) and not in UC female patients (2.5 *versus* 2, respectively; *p*=0.3). In CD patients the mean scores of CDAI before and after Ramadan were 102.5 (87.0) and 92.5 (89.7), respectively (*p*=0.6); no difference in CDAI scores was observed between men and women. There was no correlation between the number of fasting days and other variables.

Multiple linear regression results showed that younger patients with ulcerative colitis (UC) fasted for a greater number of days (*p*=0.01). Only 7 patients of those who did fast for 1 to 30 days were older than 40 years, and the rest (27 patients) were younger than 40 years. There was no difference in patients' scores or changes of scores, and type of disease between patients who fasted versus those who did not fast. In multiple logistic regressions, no factor was a significant predictor of fasting (one day or more *versus* no fasting) in Ramadan, in either the total population, or UC patients or CD patients.

Discussion

In 2006 the usual fasting time during the month of Ramadan in Iran was approximately 13 hours. Most of our patients had mild IBD and were in remission when the study started. The QoL did not change after Ramadan and no correlation was observed between the number of fasting days and the severity of the disease.

Several observations have indicated a link between living conditions that cause physiological distress and clinical manifestations of IBD, despite the fact that some studies failed to show an association between stressful life events and the occurrence of relapses.¹⁰ These results supported the prevailing impression that psychosocial stress contributes to the clinical course of IBD.

The 'normal' circadian pattern changes among the fasting Muslims. Fasting subjects remain awake during the night and spend more hours sleeping during the daytime than in other months. Previous studies have shown that more people are involved in stress-reducing and spiritual activities during this month.¹¹ also, they drink less caffeine-containing beverages and smoke less.²

In addition to a fall in gastric secretion, intestinal contractility decreases during fasting to once in every 2 hours.¹² Consequently, fasting may benefit those patients with spastic colitis and some other intestinal motility disorders.³ On the other hand, one study demonstrated progression in the level of subjective and objective irritability during the fasting period.¹ In our study, no correlation was observed between the number of fasting days and the severity of the disease, which means that fasting had no negative effects on the course of the disease. In addition, the QoL did not change after Ramadan, which indicates that although fasting imposed physiological stress on the body, its effects were not significant. Therefore, IBD patients who insist on fasting, and who are in remission, and on maintenance therapy with no comorbidities, may fast according to their will, as fasting did not change the severity of the disease or QoL in IBD patients.

The small sample size and limitation in data collection, which did not include some issues, such as alcohol withdrawal, drug abuse and psychological impairments

Table. Mean (SD) scores of pre- and post-Ramadan measurements in patients with inflammatory bowel disease

Parameter	Ulcerative colitis		Crohn's disease		All patients	
	Before	After	Before	After	Before	After
IBDQ-9	47.0 (9.6)	47.9 (7.0)	49.3 (7.3)	47.8 (6.7)	47.6 (9.0)	47.8 (7.0)
SF36	59.4 (23.0)	64.0 (16.8)	61.0 (22.0)	60.0 (18.8)	59.7 (22.0)	63.0 (17.0)
Depression	6.5 (4.8)	6.6 (3.7)	4.4 (4.4)	5.6 (3.4)	5.95 (4.6)	6.4 (3.5)
Anxiety	10.0 (5.2)	8.5 (3.5)*	10.8 (4.6)	11.6 (4.0)	10.2 (5.0)	9.3 (4.0)

**p*=0.04

during this month, questions the generality of the study. Future studies are needed to examine more thoroughly the impact of fasting on the morbidity of high-risk patients.

References

- Kadri N, Tilane A, El Batal M, Taltit Y, Tahiri S M, Moussaoui D. Irritability during the month of Ramadan. *Psychosom Med* 2000;62:280–5.
- Sakr AH. Fasting in Islam. *J Am Diet Assoc* 1975;67:17–21.
- Azizi F. Research in Islamic fasting and health. *Ann Saudi Med* 2002;22:186–91.
- Sandler RS. Epidemiology of inflammatory bowel. In: Targan SR, Shanahan F (eds). *Inflammatory bowel disease: from bench to bedside*. Baltimore: Williams and Wilkins; 1994: 5–32.
- Casellas F, Alcalá MJ, Prieto L, Armengol JR, Malagelada JR. Assessment of the influence of disease activity on the quality of life of patients with inflammatory bowel disease using a short questionnaire. *Am J Gastroenterol* 2004;99:457–61.
- Walmsley RS, Ayres RC, Pounder RE, Allan RN. A simple clinical colitis activity index. *Gut* 1998;43:29–32.
- Best WR, Bechtel JM, Singleton JW, Kern F Jr. Development of a Crohn's disease activity index. National Cooperative Crohn's Disease Study. *Gastroenterology* 1976;70:439–44.
- Montazeri A, Goshtasebi A, Vahdaninia MS, Gendek B. The Short Form Health Survey (SF-36): translation and validation study of the Iranian version. *Qual Life Res* 2005;14:875–82.
- Montazeri A, Vahdaninia M, Ebrahimi M, Jarvandi S. The Hospital Anxiety and Depression Scale (HADS): translation and validation study of the Iranian version. *Health Qual Life Outcomes* 2003;1:14.
- Niess JH, Monnikes H, Dignass AU, Klapp BF, Arcka C. Review on the influence of stress on immune mediators, neuropeptides and hormones with relevance for inflammatory bowel disease. *Digestion* 2002; 65: 131–40.
- Afifi ZE. Daily practices, study performance and health during the Ramadan fast. *J R Soc Health* 1997;117:231–5.
- Sarna SK. Cyclic motor activity; migrating motor complex: 1985. *Gastroenterology* 1985;89:894–913.

Correspondence to: Dr H Tavakkoli, Department of Gastroenterology, Al-Zahra Hospital, Soffeh Street, Isfahan, Iran. Fax: 98 (311) 264 4030

E-mail: h_tavakkoli@med.mui.ac.ir

Received June 14, 2008. Received in final revised form August 11, 2008. Accepted November 11, 2008

Acknowledgements

The Editor gratefully acknowledges the painstaking and sincere efforts of the members of the Editorial Board and the following reviewers:

Priya Abraham, Vellore

Sunil Agarwal, Vellore

Alok Agarwal, USA

Amita Aggarwal, Lucknow

N. Ananthakrishnan, Puducherry

Sanjay S Baijal, Lucknow

Deepak Kumar Bhasin, Chandigarh

Eesh Bhatia, Lucknow

Vikram Bhatia, New Delhi

Shinjini Bhatnagar, New Delhi

Vireshwar Bhatnagar, New Delhi

Ashok Chacko, Vellore

Sudhakar Chandran, Vellore

Yogesh K Chawla, Chandigarh

Sumita Danda, Vellore

Kshaunish Das, New Delhi

Ajay Duseja, Chandigarh

Usha Dutta, Chandigarh

C E Eapen, Vellore

C Ganesh Pai, Manipal

Biju George, USA

Archana Gupta, Lucknow

Molly Jacob, Indore

V Jayanthi, Chennai

A J Joseph, Vellore

Yogendra K Joshi, New Delhi

Narendra Krishnani, Lucknow

Ashish Kumar, New Delhi

Atin Kumar, New Delhi

George Kurian, Vellore

Susy Kurian, Vellore

Kaushal Madan, New Delhi

Akhtar Mahmood, Chandigarh

Ameet Mandot, Mumbai

Govind K Makharia, New Delhi

Ashis Mukhopadhyaya, Kolkata

Aabha S Nagral, Mumbai

Sita Naik, Lucknow

Nagaraj Palankar, Vellore

Rakesh Pandey, Lucknow

Ujjal Poddar, Lucknow

S Pugazhendhi, Vellore

Anna Pulimood, Vellore

Praveer Rai, Lucknow

Anup Ramachandran, Vellore

Balamurugan Ramadass, USA

Surinder V Rana, Chandigarh

A Rathinaswamy, Chennai

D Nageshwar Reddy, Hyderabad

Sanjeev Sachdev, New Delhi

Amal Kumar Santra, Kolkata

Vivek A Saraswat, Lucknow

Shiv Kumar Sarin, New Delhi

Nandakumar Shanmugam, USA

Sanjeev Sachdeva, New Delhi

Raju Sharma, New Delhi

Parul J Shukla, Mumbai

Ebby Simon, Vellore

Rajneesh K Singh, Lucknow

Durg Vijai Singh, Bhubaneswar

Ajit Sood, Ludhiana

Anshu Srivastava, Lucknow

Sathya Subramani, Vellore

Ila M Vora, Navi Mumbai

Frederick Vyas, Vellore

Surender K Yachha, Lucknow