

The cardiac patient during Ramadan and Hajj

Hassan Chamsi-Pasha^{a,*}, Waqar H. Ahmed^a, Khaled F. Al-Shaibi^a

King Fahd Armed Forces Hospital, Jeddah
^a Saudi Arabia

The holy month of Ramadan is one of the five pillars of Islam. During this month, fasting Muslims refrain from eating, drinking, smoking, and sex from dawn until sunset. Although the Quran exempts sick people from the duty of fasting, it is not uncommon for many heart disease patients to fast during Ramadan. Despite the fact that more than a billion Muslims worldwide fast during Ramadan, there is no clear consensus on its effects on cardiac disease. Some studies have shown that the effects of fasting on stable patients with cardiac disease are minimal and the majority of patients with stable cardiac illness can endure Ramadan fasting with no clinical deterioration.

Fasting during Ramadan does not seem to increase hospitalizations for congestive heart failure. However, patients with decompensated heart failure or those requiring large doses of diuretics are strongly advised not to fast, particularly when Ramadan falls in summer. Patients with controlled hypertension can safely fast. However, patients with resistant hypertension should be advised not to fast until their BP is reasonably controlled. Patients with recent myocardial infarction, unstable angina, recent cardiac intervention or cardiac surgery should avoid fasting. Physician advice should be individualized and patients are encouraged to seek medical advice before fasting in order to adjust their medications, if required.

The performance of the Hajj pilgrimage is another pillar of Islam and is obligatory once in the lifetime for all adult Muslims who are in good health and can afford to undertake the journey. Hajj is a physically, mentally, emotionally, and spiritually demanding experience. Medical checkups one or two months before leaving for Hajj is warranted, especially for those with chronic illnesses such as cardiovascular disease. Patients with heart failure, uncontrolled hypertension, serious arrhythmias, unstable angina, recent myocardial infarction, or cardiac surgery should be considered unfit for undertaking the Hajj pilgrimage.

© 2014 King Saud University. Production and hosting by Elsevier B.V. All rights reserved.

Keywords: Cardiac, Ramadan, Fasting, Hajj, Islam, Pilgrimage

Contents

Introduction	00
Fasting Ramadan	00
Effect of Ramadan on patients with known preexisting heart disease	00
Effect of fasting on the incidence of acute cardiac events	00
Effect of fasting on patients with heart failure	00
Effect of fasting on patients with hypertension.	00
Ramadan: opportunity for better lifestyle	00
Performing Hajj (Pilgrimage).	00
Conflict of interest	00
References.	00

Disclosure: Authors have nothing to disclose with regard to commercial support.
Received 26 December 2013; accepted 14 April 2014.

* Corresponding author. Address: Department of Cardiology, King Fahd Armed Forces Hospital, P.O. Box: 9862, Jeddah 21159, Saudi Arabia. Tel./fax: +966 126651868.
E-mail address: drhcpasha@hotmail.com (H. Chamsi-Pasha).



P.O. Box 2925 Riyadh – 11461KSA
Tel: +966 1 2520088 ext 40151
Fax: +966 1 2520718
Email: sha@sha.org.sa
URL: www.sha.org.sa



1016–7315 © 2014 King Saud University.
Production and hosting by Elsevier B.V. All rights reserved.
Peer review under responsibility of King Saud University.
URL: www.ksu.edu.sa
<http://dx.doi.org/10.1016/j.jsha.2014.04.002>



Production and hosting by Elsevier

Please cite this article in press as: Chamsi-Pasha H. et al., The cardiac patient during Ramadan and Hajj, J Saudi Heart Assoc (2014), <http://dx.doi.org/10.1016/j.jsha.2014.04.002>

Introduction

Ramadan is one of the five pillars of Islam. During this holy month, adult Muslims are required to refrain from all oral intake of food, water, beverages, drugs, and from sexual intercourse between dawn and sunset [1]. However, many Muslim patients with chronic illnesses insist on fasting despite Islamic rules that permit exemption in case of illness. Another pillar of Islam is Hajj, the journey to the Sacred Mosque in Mecca, which physically and financially able adult Muslims have to perform once in a lifetime [2]. These two pillars of Islam may pose problems for patients with cardiovascular disease; hence, it is important for physicians to have decision-making guidelines when consulted about these matters.

Fasting Ramadan

Despite the fact that more than one billion Muslims worldwide fast during Ramadan, there is no clear scientific consensus on the effects of fasting on cardiovascular disease.

As the month of Ramadan follows the lunar calendar, the fasting month is brought forward by about 10 days each year so that over the years the season in which Ramadan falls changes [3]. As daylight hours vary considerably between summer and winter months, the length of the fast may vary from 11 to 18 h. Moreover, the already diverse dietary habits undergo further significant alteration among the fasting Muslim populations worldwide.

Although the Qur'an exempts sick people from the duty of fasting, a significant number of patients with heart disease insist on fasting despite advice to the contrary by their physicians. Physicians do not always know how to advise patients regarding the ability to fast. This article aims to shed light on this topic through a review of the available literature.

Effect of Ramadan on patients with known pre-existing heart disease

A relatively small number of studies has been published on the effects of fasting on cardiac patients [4–6]. Chamsi-Pasha et al. reported on 86 fasting cardiac patients and showed that the majority of patients with stable cardiac disease in this cohort fasted without significantly detrimental effects [4]. Al Suwaidi et al. reported on 465 stable cardiac patients attending cardiology outpatient clinics and showed that 91.2% fasted

without detrimental effects, and only 6.7% felt worse while fasting. The authors concluded that the effects of fasting on stable patients with cardiac disease are minimal, and most patients with stable cardiac disease can fast [5]. More recently, Khafaji et al. [6] reported no effect on the clinical status of stable cardiac patients while fasting during Ramadan. They found that 71.4% had no change in their symptoms during fasting, 28.6% felt better, and no patient deteriorated as a result of fasting.

In a recent review of the Medline literature published between January 1980 and September 2012, Salim et al. revealed that the effects of fasting during Ramadan on stable patients with cardiac disease are minimal, and that patients with stable cardiac illness are able to fast during Ramadan, provided they comply with the recommended dietary and medication regimens [7].

Conclusions from these studies cannot be extrapolated to patients with worse functional classes or those who are unstable [4,7]. Notably, most of these studies were performed in the Middle East and Gulf areas, and therefore such conclusions may not be extrapolated to patients living in North European countries, where the duration of daily fasting may be two to three hours longer.

Effect of fasting on the incidence of acute cardiac events

Fasting during the month of Ramadan does not increase the burden of acute cardiac illness in the general population at large. Temizhan et al. [5] compared the incidence of acute heart disease events (acute myocardial infarction [AMI] and unstable angina) in Ramadan to one month before and after Ramadan in 1655 patients who were treated at the authors' institution between 1991 and 1997. The investigators reported no significant differences in the incidence of AMI and angina in Ramadan when compared with the other two periods. However, their study had many limitations, including the fact that it was not a population-based study, and only included a small number of patients.

In a population-based study of 20,856 patients over a period of 10 years (1991–2001) Al-Suwaidi et al. found that the incidence of acute coronary syndrome during Ramadan was similar to other non-fasting days [8].

Although there are no consensus guidelines, it appears prudent to advise patients with acute myocardial infarction, unstable angina, recent

Q1

REVIEW ARTICLE

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

percutaneous cardiac intervention (PCI) or cardiac surgery to avoid fasting.

Effect of fasting on patients with heart failure

What about patients with heart failure? A retrospective analysis of the clinical data of 2160 Qatari patients hospitalized with heart failure over a period of 10 years (January 1991 through December 2001) showed that there was no significant difference in the number of hospitalizations for heart failure during Ramadan when compared to the non-fasting months [6].

Q5 However, positive balanced patients with decompensated heart failure or those requiring large doses of diuretics should be advised not to fast, particularly when Ramadan falls in the summer. Since there are no current studies addressing this category of patients, an adverse outcome could potentially be life-threatening, and a prospective study is warranted.

Effect of fasting on patients with hypertension

There are claims that people with mild hypertension can safely undertake Ramadan fasting with once-only daily preparations. Perk et al. [9] reported that ambulatory blood pressure in treated hypertensive patients did not differ before and during Ramadan. Grade 2–3 hypertension is associated with moderate-to-very-high added cardiovascular risk, and combination therapy is recommended for effective blood pressure control in these patients. Ural et al. [10] showed that in patients with controlled grade 2–3 hypertension, 24-hour blood pressure recordings do not change during Ramadan fasting. Taking antihypertensive medications twice daily (before fasting starts at dawn, and just after breaking fast in the evening) seems to be a suitable regimen for blood pressure control. The study has certain limitations. It was carried out when Ramadan fell in winter where fasting duration was around 12 h. However, if Ramadan falls in summer time, the required period for fasting can last up to 18 h, and the pharmacokinetic and pharmacodynamic effects of longer fasting periods are unknown.

An increased number of hypertension-related visits to emergency departments in Ramadan was reported [11]. Poor compliance with the treatment regimens by fasting patients or other neuroendocrine changes induced by unaccustomed hunger periods might have contributed to this finding. Diuretics are better avoided during

fasting, especially in hot climates, or should be administered in the early evening. Patients with difficult-to-control hypertension should be advised not to fast until their BP is reasonably controlled. Patients with hypertensive emergencies should be treated appropriately, including by intravenous medications.

Ramadan: an opportunity for better lifestyle

Weight changes during Ramadan were relatively small and mostly reversed after Ramadan, gradually returning to pre-Ramadan status. Ramadan provides an opportunity to lose weight, but structured and consistent lifestyle modifications are necessary to achieving lasting weight loss [12]. Q6

Campaigns should be conducted to inform patients of the dangers of an imbalanced diet. Informing patients of the dangers of smoking and helping them to quit during this month should also be one of our concerns.

In conclusion, physician advice and management need to be individualized and patients encouraged to seek medical advice before fasting in order to adjust their medications, if necessary. Patients taking medications might wish to fast and therefore may not comply with their treatment. Doctors and pharmacists need to be aware of this possibility and offer such patients alternative treatments, e.g. once-daily formulations [13]. Patient education should emphasize the need to maintain compliance with non-pharmacological and pharmacological measures. Fasting does not apply to Muslims whose health is at risk. The Qur'an states that fasting during illness should be avoided. It is entirely to the discretion of the treating physician to decide whether a patient is allowed to fast or not.

Performing Hajj (Pilgrimage)

Hajj, the pilgrimage to Mecca in Saudi Arabia, is the largest and most long-standing annual mass gathering event on earth. Every year, as many as 2.5 million Muslims from more than 160 countries gather for the five-day Hajj in Mecca, where population density can reach seven people per square meter [14]. These pilgrims are typically older adults with a spectrum of comorbid conditions, and of various ethnicities.

Cardiovascular disease has recently emerged as the leading cause of death during Hajj [15].

Many patients have had cardiac arrests outside hospitals at Hajj sites. Although healthcare

response workers have ambulance-supported emergency medical service teams, they are often unable to resuscitate pilgrims [16].

Performance of Hajj and its rites is physically very demanding. Extreme physical stressors such as heat, sun exposure, thirst, crowding, traffic congestions, steep inclines and rough ground underfoot increase the risk of communicable diseases, particularly respiratory infections in those with certain pre-existing health conditions such as heart disease, renal disease, chronic lung disease and other conditions, including diabetes mellitus [17].

Cardiac patients planning for the Hajj should consult their doctor before the journey, as Hajj is strenuous even for healthy adults – and for those with pre-existing cardiac disease, the physical stress can easily precipitate ischemia.

Cardiac patients should ensure sufficient supplies of, and compliance with, medications. They should avoid crowds, perform some rituals by proxy, and report to the closest health center for any symptom indicating cardiac decompensation [16].

Pilgrims with unstable cardiac status should avoid the Hajj, and clinicians must encourage this preventative attitude. Patients with heart failure, uncontrolled hypertension, serious arrhythmias, unstable angina, recent myocardial infarction, or cardiac surgery should be considered unfit for performing Hajj.

Collaborative efforts between the host countries of pilgrims and the Kingdom of Saudi Arabia should be geared towards implementing effective medical screening to rule out major risk factors, such as patients with poorly controlled cardiac disease, in order to reduce casualties during the Hajj pilgrimage [15].

Conflict of interest

None declared.

References

- [1] Aadil N, Houti IE, Moussamih S. Drugintake during Ramadan. *BMJ* 2004;329(7469):778–82. 292
- [2] Gatrad AR, Sheikh A. Hajj: journey of a lifetime. *BMJ* 2005;330(7483):133–7. 293
- [3] Hui E, Bravis V, Hassanein M, Hanif W, Malik R, Chowdhury TA, et al.. Management of people with diabetes wanting to fast during Ramadan. *BMJ* 2010;340:C3053. 294
- [4] Chamsi-Pasha H, Ahmed WH. The effect of fasting in Ramadan on patients with heart disease. *Saudi Med J* 2004;25(1):47–51. 295
- [5] Temizhan A, Dönderici O, Ouz D, Demirbas B. Is there any effect of Ramadan fasting on acute coronary heart disease events? *Int J Cardiol* 1999;70(2):149–53. 296
- [6] Al Suwaidi J, Bener A, Hajar HA, Numan MT. Does hospitalization for congestive heart failure occur more frequently in Ramadan: a population-based study (1991–2001). *Int J Cardiol* 2004;96(2):217–21. 297
- [7] Salim I, Al Suwaidi J, Ghadban W, Alkilani H, Salam AM. Impact of religious Ramadan fasting on cardiovascular disease: a systematic review of the literature. *Curr Med Res Opin* 2013;29(4):343–54. 298
- [8] Al Suwaidi J, Bener A, Suliman A, Hajar R, Salam AM, Numan MT, et al.. A population based study of Ramadan fasting and acute coronary syndromes. *Heart* 2004;90(6):695–6. 299
- [9] Perk G, Ghanem J, Aamar S, Ben-Ishay D, Bursztyan M. The effect of the fast of Ramadan on ambulatory blood pressure in treated hypertensives. *J Hum Hypertens* 2001;15(10):723–5. 300
- [10] Ural E, Kozdag G, Kilic T, Ural D, Sahin T, Celebi O, et al.. The effect of Ramadan fasting on ambulatory blood pressure in hypertensive patients using combination drug therapy. *J Hum Hypertens* 2008;3:208–10. 301
- [11] Topacoglu H, Karcioğlu O, Yuruktumen A, Kiran S, Cimrin AH, Ozucelik DN, et al.. Impact of Ramadan on demographics and frequencies of disease-related visits in the emergency department. *Int J Clin Pract* 2005;59(8):900–5. 302
- [12] Sadeghirad B, Motaghipisheh S, Kolaheidoost F, Zahedi MJ, Haghdoost AA. Islamic fasting and weight loss: a systematic review and meta-analysis. *Public Health Nutr* 2012;17(2):396–406. 303
- [13] [No authors listed]. Ramadan: health effects of fasting. *Lancet* 2009; 374(9690):588. 304
- [14] Aljoudi AS. A University of the Hajj? *Lancet* 2013;382(9906):1689. 305
- [15] Al Shimemeri A. Cardiovascular disease in Hajj pilgrims. *J Saudi Heart Assoc* 2012;24(2):123–7. 306
- [16] Ahmed QA, Arabi YM, Memish ZA. Health risks at the Hajj. *Lancet* 2006;367(9515):1008–15. 307
- [17] Shafi S, Booy R, Haworth E, Rashid H, Memish ZA. Hajj: health lessons for mass gatherings. *J Infect Public Health* 2008;1(1):27–32. 308

291

292

293

294

295

296

297

298

299

300

301

302

303

304

305

306

307

308

309

310

311

312

313

314

315

316

317

318

319

320

321

322

323

324

325

326

327

328

329

330

331

332

333

334

335

336

337

338

339

340

341

342

343

344

345

346