Coronary artery disease and diabetes — Management during Ramadan

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Abstract

Ramadan is the Islamic holy month of fasting and practiced by all adult Muslims all over the world at the same time simultaneously. Although people who are ill or diabetics with coronary heart disease are exempted from fasting, they still desire to fast and this is a challenge to themselves and the treating physician.

We performed a systematic review of the available Medline English literature on the subject from January 1982 to December 2014 so as to help guide physicians in managing these patients.

The results revealed that although the metabolic parameters change during Ramadan fasting, but this does not lead to any significant increase in the incidence of acute coronary events. Most adults with stable coronary artery disease can fast without significant complications, but those with unstable disease or recent or pending revascularization procedures should generally refrain from fasting. Regular monitoring by the physician is mandatory along with adjustment of the dosages.

Keywords: Ramadan, Fasting, Coronary Artery Disease, Diabetes mellitus, Management.

Introduction

Ramadan is one of the five pillars of Islam. During this month, all adult Muslims need to fast from dawn to dusk besides following other forms of abstinences. The month of Ramadan follows the lunar calendar and hence the fasting month is brought forward by about 10 days each year. This brings a change of season for the fasting month along with the length of the fasting time which may vary from 11 to 18 hours. Patients with Diabetes Mellitus (DM) and Coronary Artery Disease (CAD) usually need to adhere to dietary schedule and are required to take multiple medication. The abrupt transition in dietary habits and physical activity raises the concern of precipitating Acute Coronary Syndromes (ACS) or worsen the clinical condition. In diabetics there is a risk of precipitation of significant hypoglycaemia or hyperglycaemia. This systematic review of literature examined the evidence towards the development of these complications.

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Method

A Medline search of English literature was performed between 1982 and 2014, using the key words Ramadan, religious fasting, diabetes mellitus and coronary artery disease. Abstracts of identified papers were reviewed for appropriateness. Reference lists of articles were seen for additional papers. Data were then extracted from original papers published in peer reviewed journals.

Results

None of the available studies have analysed patients of both Diabetes Mellitus (DM) and Coronary Artery Disease (CAD) together. Hence the data for both the diseases was reviewed separately and is presented as such.

Fasting and Coronary Heart Disease

A relatively small number of studies have been published on the effects of fasting on cardiac patients.[1-4] Chamsi-Pasha et al. published a report on 86 fasting cardiac patients which showed that the majority of patients with stable cardiac disease in this cohort fasted without significant detrimental effects.[1] Al Suwaidi et al. in their study on 465 stable cardiac patients attending cardiology outpatient clinics showed that 91.2% fasted without detrimental effects, and only 6.7% felt worse during fasting. The authors concluded that the effects of fasting on patients with stable cardiac disease are minimal, and most of these patients can fast.[4] More recently, Khafaji et al.[5] reported no adverse effects 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. In a recent review of the Medline literature published between January 1980 and September 2012, Salim et al found that the effects of fasting during Ramadan were minimal on patients with stable cardiac disease, and they were able to fast, provided they complied with the recommended dietary and medication regimens[3] (Table-1).

More difficult, however, is to estimate the risk of precipitation of acute coronary event, considering that a day long fast is indeed a stress on the body and mind.

In a study by O Ibrahim et al a significant reduction of hs-CRP and PAI-1 was observed during Ramadan compared

Table-1: Comparative incidence of acute cardiovascular illness during month of Ramadan fasting and usual non-fasting days (modified from Salim et al[3]).

Author(s)	Year	Place	Period of study	Type of study	Comparative incidence of acute cardiac illness or stroke
Temizhan et al[2]	1999	Turkey	1991-1997	Retrospective study of 1655 patients hospitalized with ACS during as well as 1 month before and after Ramadan between 1991 and 1997	The number of patients with ACS during Ramadan was significantly lower (p=0.03) as compared to 1 month before and after
Al Suwaidi et al[4]	2004	Qatar	Jan 1991 to Dec 2001	Retrospective cohort study involving analysis of clinical records of 8446 patients admitted with ACS	Number of hospitalizations for ACS were similar during Ramadan compared to other days
Chamsi-Pasha et al[1]	20042005	Saudi Arabia	2004	Prospective observational study of 86 stable cardiac patients attending outpatient clinic	The clinical status of patients remained stable during Ramadan fasting
Khafaji et al[5]	2012	Qatar	NA	Prospective observational study of 56 stable cardiac patients	The clinical status of patients remained stable during Ramadan fasting

ACS= Acute Coronary Syndrome, NA= Not Available.

to pre-Ramadan ($p < 0.001$ and 0.031). The reduction of PAI-1 levels continued till post-Ramadan ($p= 0.005$). A rebound in the levels of hs-CRP was observed in post-Ramadan period compared to Ramadan ($p < 0.001$).[6] Looking at this data, though small, one would assume that acute coronary events would not increase during the fasting month. Also, fasting during the month of Ramadan does not seem to increase the burden of acute cardiac illness in the general population at large. Temizhan et al.[2] compared the frequency of acute heart disease events (acute myocardial infarction [AMI] and unstable angina) during Ramadan with the figures one month before and after Ramadan on 1655 patients, treated at their institute between 1991and 1997. No significant differences were reported on AMI and unstable angina during 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 including 20,856 patients over a period of 10 years (1991-2001) Al-Suwaidiet al. found that the frequency of acute coronary syndrome during Ramadan was similar to other non-fasting days.[4]

Pragmatic Advice

Religion does not advice to take a risk on health. Patients who had suffered a recent coronary event, or have a pending revascularization or have undergone angioplasty and stenting in the immediate past, should refrain from prolonged fasting such as during the month of Ramadan. The implications of fasting, including its possible risks and benefits, should be explained with empathy to all such patients.

Medical Management of CAD in Ramadan

Most patients with chronic stable angina (CSA) do not need an alteration in the doses of their anti-anginal medication, although the afternoon dose will necessarily have to be shifted to morning or night. Drugs given thrice daily can be converted to single sustained release formulations especially calcium channel blockers (CCB). Short-acting di-nitrates reduce preload and can precipitate a postural fall in BP and should preferably be given in the evening after the fast is completed. In patients already on dinitrates it would be rather preferable to switch to a single long-acting mono-nitrate preparation.

Patients on anti-hypertensive medications affecting vascular tone (angiotensin converting enzyme inhibitors, dihydropyridine CCB, angiotensin receptor blockers, alpha-blockers) should be warned about postural fall in blood pressure and may require dose adjustments if such an event were to occur.

Diuretics, whether for the purpose of CCF or as anti-hypertensive, should necessarily be stopped as they induce thirst which is especially likely to occur with loop-diuretics and dyselectrolytemia which may get compounded due to the prolonged fasting state, more so when the Ramadan falls during hot seasons.

Discussion

For the believers of Islam, Ramadan is not merely a month of fasting, but it is also a month of worship, abstinence and benevolence of the Almighty. Fasting is nevertheless the most important part of the abstinence and leads to change in the dietary patterns, physical activity levels and in most part of the world changes in sleep patterns too. All these are likely to affect the metabolic and cardiovascular activities. However, our review shows that on patients with stable CAD the impact is minimal and does not lead

to any increase in acute events. Most of the drug doses and their regimen are easily manageable during this period and need not to be altered. Besides, the month itself imposes a mild physical hibernation for most individuals and unaccustomed physical exertion is usually not undertaken which by itself precludes any precipitation of sudden events. Since there is no data available in patients who have unstable CAD the impact of the changes in the above patterns cannot be assessed and no certain recommendations can be formulated.

In patients with DM Type-1 the risk of metabolic complications far outweighs the benefit of fasting in general. However, in DM Type-2 as observed above, the doses of Insulin and OHA certainly require modifications along with altered timing and is usually sufficient to curtail major catastrophes.

We had no data on any single study to put together any analysis on diabetics with CAD observing such a religious fast but as the two diseases frequently co-exist, often one of the two being covert, it will be reasonable to assume that in a given patient this discussion may still apply individually.

Conclusions

Patients with stable CAD can observe the month long fasting of Ramadan without anticipating any major adverse cardiac events while those with unstable disease or recent/pending revascularization should largely refrain. Diabetics should fast supervised by their physicians with appropriate dose and time modifications of medications and can also avoid major hypoglycaemic or hyperglycaemic events.

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