



BRIEF REPORT

The Impact of Fasting and Post-Fasting activities on Cardiac Arrhythmias in Patients with Cardiovascular Disease: An Observational Pilot Study

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ABSTRACT

Background: Elderly patients with cardiovascular disease often experience arrhythmias triggered by various physiological factors, including metabolic stress and autonomic imbalance. Previous studies have suggested that fasting may reduce the frequency of arrhythmias in some patients, whereas heavy meals and prolonged moderate physical activity may precipitate arrhythmic episodes.

Aim: To analyze arrhythmia frequency in cardiac patients during intermittent fasting compared with periods following heavy meals and prolonged moderate physical activity.

Study Design: An observational pilot study.

Methods: This observational pilot study included four male and one female patient with previously diagnosed cardiovascular disease. The mean age was 70.4 years (range, 61-78 years). All patients were receiving beta-blockers but no antiarrhythmic medications. Twenty-four-hour Holter electrocardiography was performed to monitor arrhythmia frequency. Because this was a low-risk observational study using anonymous data, ethical approval was not required.

Results: All patients demonstrated a reduction in arrhythmia frequency during fasting. Arrhythmic episodes, including ventricular extrasystoles (VES), atrial fibrillation, and supraventricular extrasystoles, were frequently observed after heavy meals and during prolonged moderate physical activity. The highest average number of ventricular arrhythmias during the fasting period was 578, recorded in a 68-year-old male patient with a history of stable angina pectoris. One hour after a full-course meal, the average number of VES increased to 1,585, and after two hours of prolonged moderate physical activity, the average number of ventricular arrhythmias increased to 2,027. The remaining patients primarily experienced palpitations after heavy meals and episodes of arrhythmia during prolonged moderate physical activity. No impairment in renal function, sleep quality, or hydration status was observed.

Conclusion: This observational pilot study provides hypothesis-generating evidence suggesting an association between intermittent fasting and reduced arrhythmia frequency in cardiac patients, whereas heavy meals and moderate physical activity may act as triggering factors.

Keywords: Cardiac arrhythmia, intermittent fasting, cardiovascular disease

INTRODUCTION

Cardiac arrhythmias represent a significant clinical concern in patients with cardiovascular disease, particularly among the elderly. The prevalence of atrial fibrillation (AF), supraventricular arrhythmias, and ventricular ectopy increases with age and the presence of comorbidities such as hypertension and ischemic cardiovascular disease. Several physiological factors may influence the onset of arrhythmias, including autonomic nervous system imbalance, metabolic changes, electrolyte disturbances, and hemodynamic stress.¹ Several studies have demonstrated that intermittent fasting is associated with favorable metabolic effects, including improved insulin sensitivity, improved glucose and lipid profiles, and reductions in body mass index, and waist circumference.^{2,3} Heavy meals may increase vagal and sympathetic activity, alter blood distribution, and

increase cardiac workload. Similarly, prolonged moderate physical activity may trigger arrhythmias through sympathetic stimulation, dehydration, and electrolyte imbalance.⁴ Conversely, fasting has been associated with metabolic and autonomic changes that may reduce cardiovascular stress in certain individuals,⁵ and some clinical observations have suggested a reduction in arrhythmia symptoms during fasting periods. This case series aimed to describe elderly patients with known arrhythmias who experienced fewer arrhythmic episodes during fasting than during periods following heavy meals or prolonged moderate physical activity.

METHODS

This observational pilot study included four male and one female patient who were followed at a cardiology outpatient clinic.

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Inclusion Criteria

- Previously diagnosed cardiac arrhythmia
- Regular cardiology follow-up
- Available clinical documentation during fasting periods

Data Collected

- Sex, age, type of arrhythmia, symptoms during fasting, arrhythmic episodes after heavy meals, and episodes during prolonged moderate physical activity
- Holter electrocardiography reports

RESULTS

All five patients reported a reduction in arrhythmic symptoms during fasting. In contrast, arrhythmic episodes were more frequently reported after large meals and prolonged moderate physical activity. The observed arrhythmias included ventricular extrasystoles (VES), AF, and supraventricular extrasystoles (SVES). The average number of ventricular arrhythmias during fasting was 578. Approximately 30 minutes after a heavy meal, the average number of ventricular arrhythmias increased to 1,585. Following one hour of prolonged mild-to-moderate exercise performed after fasting, the average number of ventricular arrhythmias further increased to 2,027 (Table 1).

Case Reports

Patient 1

A 71-year-old male with a history of paroxysmal AF and hypertension reported no arrhythmia symptoms during fasting. However, he experienced three episodes of an irregular rhythm following large full-course evening meals and prolonged moderate physical activity.

Patient 2

A 74-year-old male with ischemic heart disease and SVES reported fewer arrhythmic symptoms during fasting but experienced significant ventricular arrhythmias after a heavy meal and prolonged walking and prolonged moderate physical activity.

Patient 3

A 68-year-old male with stable angina pectoris and occasional VES had no arrhythmias recorded during fasting. Significant VES were observed

after heavy meals and following one hour of prolonged moderate physical activity.

Patient 4

A 78-year-old male with previously diagnosed AF maintained a stable cardiac rhythm during fasting but experienced a brief arrhythmic episode following prolonged physical activity.

Patient 5

A 61-year-old female with hypertension and intermittent supraventricular arrhythmias reported an improvement in symptoms during fasting but experienced palpitations after a heavy meal.

DISCUSSION

This observational pilot study highlights a potential association between intermittent fasting and a reduced frequency of arrhythmias in patients with cardiovascular disease. Previous studies have suggested that fasting may enhance parasympathetic activity and improve heart rate variability, thereby contributing to greater cardiac rhythm stability.^{6,7} Additional reported benefits include caloric restriction, improved glucose and cholesterol regulation, and anti-inflammatory effects. However, an inappropriate diet and moderate to vigorous physical exercise may exacerbate pre-existing cardiac arrhythmias.⁸ Potential adverse effects of fasting include blood pressure fluctuations and, less commonly, electrolyte imbalances, dehydration, hypoglycemia, bradycardia, and QT interval prolongation.

CONCLUSION

The findings of this observational pilot study suggest that intermittent fasting is associated with a reduced frequency of cardiac arrhythmias in patients with cardiovascular disease. In contrast, heavy meals and prolonged moderate physical activity may act as potential triggers for arrhythmic episodes. Further prospective clinical studies are warranted to better understand the underlying physiological mechanisms and the clinical implications of these observations.

Table 1. Baseline demographics and clinical characteristics of the study participants

Age/gender	CVD	Arrhythmia	Intermittent fasting	Full-course meal	Moderate physical activity
71/male	HTA AF history	Paroxysmal AF	None	Palpitations and irregular rhythm	Palpitations PAF
74/male	IHD	SVES	Reduced symptoms	Occasional palpitations	Arrhythmia
68/male	Stable angina	VES	None	Increased VES	Increased VES, Mild symptoms
78/male	Previous AF	Atrial arrhythmia	Stable rhythm	Mild palpitations	Arrhythmia
61/female	HTA	Supraventricular arrhythmia	No symptoms	Palpitations	Mild palpitations

CVD: Cardiovascular disease, HTA: Arterial hypertension, AF: Atrial fibrillation, PAF: Paroxysmal atrial fibrillation, IHD: Ischemic heart disease, SVES: Supraventricular extrasystoles, VES: Ventricular extrasystoles

Informed Consent: Consent form was filled out by all participants.

Authorship Contributions: Concept: S.S., Design: S.S., Data Collection or Processing: S.S., Analysis or Interpretation: S.S., N.M., A.J., Literature Search: S.S., N.M., A.J., Writing: S.S., N.M., A.J.

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