# DIAGNOSTIC VALUE OF 24-HOUR HOLTER ECG MONITORING FOR DETECTION OF LIFE-THREATENING ARRHYTHMIAS IN PATIENTS WITH CORONARY ARTERY DISEASE

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**ABSTRACT**

**Background.** 24-hour Holter ECG monitoring (HM ECG) was performed in 60 patients with coronary artery disease (CAD) of three clinical forms: stable exertional angina, unstable angina, and post-infarction cardio sclerosis (PICS). The study aimed to evaluate the diagnostic yield of HM ECG for detecting life-threatening arrhythmias and transient ischemia across different CAD stages, and to assess the method's utility in monitoring ant arrhythmic and antianginal therapy.

**Results.** Arrhythmia severity increased consistently with CAD progression. Diagnostic performance was high: sensitivity 86%, specificity 89%. ECG confirmation of ischemia was achieved in 22.9% of stable angina patients and 50.9% of PICS patients. Amiodarone demonstrated the greatest ant arrhythmic efficacy.

**Keywords:** coronary artery disease; Holter ECG monitoring; arrhythmias; angina pectoris; post-infarction cardio sclerosis; ant arrhythmic therapy; ischemia.

## 1. Introduction

Coronary artery disease (CAD) remains the leading cause of cardiovascular mortality worldwide, accounting for up to 53% of all cardiovascular deaths [1, 2]. In Uzbekistan, CAD represents 56.6% of total mortality among men aged 40–59 [3]. One of the most serious challenges in clinical cardiology is the timely identification of life-threatening arrhythmias: sudden death during an angina attack is most commonly triggered by fatal rhythm disturbances arising against a background of acute myocardial ischaemia [4].

24-hour (Holter) ECG monitoring (HM ECG) is a continuous non-invasive electrocardiographic recording method performed during the patient's normal daily activities. Its wide availability, high informativeness, and suitability for repeated use make it the method of choice for rhythm assessment in CAD patients [5]. However, its diagnostic yield across the different clinical forms of CAD had not been sufficiently studied, which defined the purpose of the present investigation.

## 2. Methodology

60 CAD patients (mean age 47.3 ± 8.6 years, range 30–65) from Andijan State Medical Institute (2017–2020) were divided into three groups; a control group comprised 10 healthy individuals aged 30–45.

| Group | Clinical Form |
|---|---|
| Group II (n = 20) | Stable exertional angina — CCS functional class II. |



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| | |
|---|---|
| Group III (n = 20) | Unstable angina. |
| Group IV (n = 20) | Post-infarction cardiosclerosis (PICS). |

All patients underwent 24-hour HM ECG (SCHILLER system, 3 leads) before and after treatment. Significant ischemia was defined as ST-depression ≥ 1 mm for ≥ 1 minute. Antiarrhythmic efficacy was assessed by a ≥ 75% reduction in daily ventricular premature complexes (VPCs).

**3. Results**

HM ECG revealed rhythm disturbances in all patients, increasing in severity across groups. Group II showed isolated VPCs and supraventricular tachycardia with no life-threatening events; ischaemia was ECG-confirmed in only 22.9% despite typical angina symptoms. Group III showed higher Lown-grade VPCs, paired complexes, and ST-depression up to 3.7 mm. Group IV (PICS) had the most severe arrhythmias — polymorphic, high-frequency, potentially fatal — with ischemia confirmed in 50.9% of patients. Overall sensitivity of HM ECG was 86%; specificity 89%. Amiodarone showed the greatest antiarrhythmic efficacy; long-acting nitrates had the highest patient adherence.

**4. Conclusion**

HM ECG is a valuable tool in the comprehensive diagnosis of CAD and assessment of arrhythmia severity. A key limitation is that ischemic ECG changes are not captured in a considerable proportion of patients with clinically confirmed CAD. This is primarily due to compensatory mechanisms — collateral blood flow and ischemic preconditioning — that operate effectively under ordinary daily activity but not under exercise stress conditions [4, 5]. The consistent worsening of arrhythmia severity from stable angina to PICS reflects progressive myocardial remodelling and deterioration of electrophysiological properties.

The high sensitivity (86%) and specificity (89%) support broad use of HM ECG in outpatient cardiology. Its significant advantages over exercise stress tests include non-invasiveness, absence of contraindications, and the ability to capture arrhythmias under real-life conditions including nocturnal hours and emotional stress. Incorporating HM ECG into the standard CAD work-up enables optimisation of both antiarrhythmic and antianginal therapy.

**1.** HM ECG reliably detects life-threatening arrhythmias in CAD with sensitivity 86% and specificity 89%.

**2.** Arrhythmia severity increases consistently with CAD progression; PICS patients carry the highest burden.

**3.** ECG confirmation of ischaemia is achievable in only 22.9% (stable angina) and 50.9% (PICS), owing to compensatory mechanisms active under daily activity.

**References**

1. Kurbanov R. D. Epidemiology and primary prevention of CAD. Medical Journal of Uzbekistan. 2000; (2–3): 10–12. [In Russian]
2. Grubb N., Newby D. Cardiology. Moscow: MEDpress-inform; 2006. [In Russian]



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3. Tozhiev M. S. et al. Prevalence of CAD and major risk factors. Terapevticheskiy Arkhiv. 2004; (1): 33–38. [In Russian]
4. Kodirova G. I. Non-invasive diagnostic methods in CAD [Dissertation]. Andijan; 2006. [In Russian]
5. VNOK National Guidelines. Atherosclerosis diagnosis and correction (4th ed.). Moscow; 2009. [In Russian]
6. Zipes D. P. et al. ACC/AHA/ESC 2006 Guidelines — ventricular arrhythmias. Europace. 2006; 8(9): 746–837.
7. Klyuzhev V. M., Ardashev V. N. Coronary Artery Disease. Moscow: Meditsina; 2004. [In Russian]



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