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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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ELECTROCARDIOGRAPHY CHARACTERISTICS OF THE PATIENTS WITH NON-ST-ELEVATION MYOCARDIAL INFARCTION (NSTEMI)

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Abstract.

Objective: To assess ECG changes in patients with non-ST-elevation myocardial infarction.

Materials and Methods: A total of 200 patients with NSTEMI were examined, including 164 men (82%) and 36 women (18%), aged 33 to 86 years, with a mean age of 62.21 ± 9.38 years. Patients underwent clinical examination and standard 12-lead ECG, GRACE risk assessment and Killip heart failure severity score. Patients were divided into two groups: group I (n = 94): NSTEMI without CAD; group II (n = 106): NSTEMI with CAD, including recent NSTEMI without ST elevation.

Results: In patients in group II, ECG changes were more pronounced and diffuse: the frequency of ST depression, T wave inversion, pathological Q wave and conduction disturbances was higher than in group I ($p < 0.05$). The incidence of ST depression of 77.4% in group II is high for NSTEMI and reflects the more severe risk profile of the cohort (CAD/AMI, GRACE, Killip).

Conclusion: Pathological Q-waves are associated with more extensive lesions and a worse clinical profile (higher GRACE and Killip II–III), confirming their poor prognostic value. The overall picture (ST depression ± Q waves) strengthens the rationale for an early invasive strategy and intensification of therapy in high-risk NSTEMI in accordance with current ESC/ACC/AHA guidelines.

Key words. Non-ST-elevation myocardial infarction, multivessel disease, coronary artery disease, electrocardiography.

Introduction.

Non-ST-elevation myocardial infarction (NSTEMI) is a significant condition among acute coronary syndromes and differ with the high risk of complications and lethality. According to current studies, NSTEMI occurs in 60–70% of patients with acute coronary syndrome and is characterized by the absence of persistent ST-segment elevation, making early risk stratification more difficult [1]. Electrocardiography (ECG) remains one of the most important diagnostic tools in evaluating patients with acute coronary syndrome. This is particularly true for NSTEMI, the diagnosis of which requires careful interpretation of ECG changes in combination with clinical and laboratory findings.

NSTEMI is characterized by considerable clinical and pathophysiological variability. ECG findings and the extent of coronary artery disease play a crucial role in risk assessment and treatment planning. In NSTEMI, ECG often shows ST-segment depression, T-wave inversion, or other nonspecific changes [2].

In NSTEMI, the severity of coronary artery involvement can influence the clinical presentation and diagnostic findings. Patients with more severe lesions may experience more intense chest pain, shortness of breath, and other symptoms, as well as more significant ECG changes and higher levels of cardiac biomarkers such as troponin. Diagnosis and risk stratification in these patients are based on a combination of ECG findings, laboratory markers of myocardial necrosis, and imaging of the coronary arteries. ECG should be performed at the first stage of the examination for all patients and should not be delayed for history-taking, physical examination, or other tests [3].

Dynamic changes on the ECG, particularly in the ST segment and T wave, may reflect the degree and extent of ischemia, and also correlate with angiographically confirmed coronary artery lesions. Studying these changes is important for prognosis of assessment and treatment strategy selection.

Objective of the study – to evaluate ECG changes in patients with non–ST-segment elevation myocardial infarction (NSTEMI).

Materials and Methods of the Investigation.

Two hundred patients with NSTEMI were examined, including 164 men (82%) and 36 women (18%). The age range included patients from 33 to 86 years. All patients who participated in the study gave written informed consent. Inclusion criteria were: patients with a diagnosis of NSTEMI confirmed by clinical, laboratory, and instrumental methods, aged 33–86 years, after revascularization, after initial in-hospital assessment, with possible concomitant diagnosis of coronary artery disease. Exclusion criteria included: prior ST-elevation myocardial infarction (STEMI), cardiomyopathies, and valvular heart diseases. The study was conducted in accordance with the principles of the Helsinki Declaration.

Patients were divided into two groups: group I (n = 94): NSTEMI without CAD; group II (n = 106): NSTEMI with CAD, including recent NSTEMI without ST elevation.

A medical history was collected from all patients. All patients underwent clinical examination and a standard 12-lead ECG. Changes in the ST segment, T wave, presence of pathological Q waves, as well as rhythm and conduction disturbances were assessed. Upon admission, the risk was calculated for all patients using the GRACE score (Global Registry of Acute Coronary Events - Глобальный регистр острых коронарных событий). The Killip classification was used to evaluate the severity of heart failure.

Statistical analysis was performed using the Statistica 16 software (StatSoft, USA). The statistical analysis of the results included calculation of mean values, standard deviation, minimum and maximum values. Data were presented as absolute numbers and percentages. The t-test and χ^2 test with Yates correction were used to compare data between groups. A p-value of ≤ 0.05 was considered statistically significant.

Results and Discussion.

The average age of patients was 62.21 ± 9.38 years. There were 3 (1.5%) patients aged 33 to 40 years, 17 (8.5%) aged 41–50 years, 59 (29.5%) aged 51–60 years, 85 (42.5%) aged 61–70 years, 29 (14.5%) aged 71–80 years, and 7 (3.5%) aged 81–86 years. No statistically significant differences were found in the distribution of patients by age groups between men and women (in all cases $p > 0.05$).

Baseline clinical and anamnestic characteristics of patients with NSTEMI are presented in Table 1.

Table 1. *Baseline Characteristics of Examined Patients.*

Parameter	NSTEMI Patient Group (n=200)
Chest pain, n (%)	**194 (97,0)**
Mean Troponin T, ng/mL	**0,812±0,304**
Diabetes mellitus, n (%)	**52 (26,0)**
Arterial hypertension, n (%)	**143 (71,5)**
Mean body mass index (BMI), kg/m²	**28,7±4,3**
Active smoking, n (%)	**89 (44,5)**
Duration of ischemic heart disease (IHD), years	**6,2±3,6**
Previous myocardial infarction (MI), n (%)	**39 (19,5)**
Family history of IHD, n (%)	**24 (12,0)**
History of coronary revascularization, n (%)	**31 (15,0)**
Systolic blood pressure (SBP), mmHg	**131,6±18,2**
Diastolic blood pressure (DBP), mmHg	**82,4±11,7**

Based on the data in Table 1, it can be noted that the vast majority of patients suffered from arterial hypertension and excess body weight; nearly half were active smokers, and one in four had concomitant diabetes mellitus. The high troponin levels confirm acute myocardial injury in all patients included in the study.

Thus, patients with NSTEMI are characterized by multiple traditional cardiovascular risk factors and a typical clinical presentation, highlighting the need for a comprehensive approach to their assessment and treatment. Analysis of these data allows for evaluation of cardiovascular risk levels as well as the prevalence of comorbid conditions in this sample.

In most patients — 168 (84%) — the clinical condition at admission was assessed as satisfactory. However, 28 patients (14%) showed signs of left ventricular failure (Killip class II), and 4 patients (2%) were diagnosed with cardiogenic shock (Killip class IV). These data indicate the presence of severe forms of NSTEMI in some cases.

Among comorbidities, the most frequently recorded were chronic heart failure (CHF) — in 49 patients (24.5%), chronic kidney disease (CKD) — in 17 patients (8.5%), and atrial fibrillation — in 22 patients (11%). Dyslipidemia was diagnosed in 138 patients (69%), of whom 31% were aware of their diagnosis before hospitalization and received appropriate treatment.

Before hospital admission, 76 patients (38%) were taking acetylsalicylic acid, 71 (35.5%) beta-blockers, 59 (29.5%) statins, 44 (22%) ACE inhibitors or angiotensin II receptor blockers, and 9 (4.5%) oral anticoagulants (due to atrial fibrillation or valve replacement). Thus, a significant portion of patients were already receiving medical prevention of cardiovascular events; however, this did not prevent the development of NSTEMI.

Upon admission, the GRACE risk score was calculated for all patients, with a mean value of 132 ± 25 points, corresponding to a moderate risk of adverse outcomes. In 46 patients (23.0%), the GRACE score exceeded 140, which allows refer them as high risk for complications and mortality. These data highlight the need for an early invasive approach in managing this patient group.

Thus, the patients with NSTEMI included in the study were characterized by a typical clinical and demographic profile for this pathology—predominantly older men, a high prevalence of arterial hypertension, obesity, diabetes mellitus, and other risk factors. Stratification by condition at admission revealed severe forms of the disease in some patients. A considerable proportion had comorbidities and were receiving cardiotropic therapy prior to hospitalization. Comprehensive clinical evaluation and prognostic scoring confirm the need for an active management strategy for this population, including early angiography and revascularization.

Upon admission, ST-segment depression ≥ 0.5 mm was observed in 139 out of 200 patients, most often in leads V4–V6, pathological Q waves were noted in 9% of cases (n = 18), and rhythm and conduction disturbances were found in 17.5% of cases (n = 35).

We analyzed ECG changes in patients with NSTEMI depending on the presence of ischemic heart disease (IHD) and concomitant acute myocardial infarction. Accordingly, patients were divided into three groups: Group I included 94 patients with NSTEMI without concomitant IHD; Group II included 99 patients with NSTEMI against the background of established IHD; and Group III included 7 patients with NSTEMI, IHD, and simultaneously diagnosed acute myocardial infarction (AMI).

In the 94 patients of Group I, the following ECG changes were detected: ST-segment depression in 57 (60.6%), T-wave inversion in 46 (48.9%), and conduction disturbances in 11 (11.7%) patients. ST-segment depression was predominantly found in leads V4–V6. Pathological Q waves were absent in all cases. Conduction disturbances most often manifested as intraventricular conduction delay. Heart rate ranged from 68 to 104 beats per minute, with an average of 83 ± 9 beats per minute.

Patients in Group I ranged in age from 33 to 86 years, with a mean age of 62.35 ± 10.33 years; men comprised 78.7% (n = 74), and women 21.3% (n = 20). There were no statistically significant differences in the age distribution between men and women in Group I ($p > 0.05$).

In Group I patients with NSTEMI without signs of IHD (n = 94), men predominated (78.7%). The most numerous age category among men was 61–70 years (41.9%), while the same age group (40.0%) also dominated among women.

Despite quantitative differences in age distribution between men and women, no statistically significant differences were found in any age subgroup ($p > 0.05$). The greatest tendency toward difference was observed in the 71-80-year age group ($\chi^2 = 3.030$; $p = 0.082$), but statistical significance was not reached.

Thus, gender and age in Group I patients did not show a

significant associative distribution, as confirmed by the χ^2 test results.

In Group I, patients more frequently reported chest pain (93.6%) and excess body weight (45.7%).

ECG in Group II patients with concomitant IHD revealed more pronounced changes: ST-segment depression was present in 82 (77.4%) patients, T-wave inversion in 74 (68.9%), pathological Q waves in 18 (17.0%), and conduction disturbances, including left anterior fascicular block and intraventricular block, in 24 (22.6%) patients. ST-segment depression was predominantly found in the anterolateral leads (I, aVL, V5–V6). Signs of left ventricular hypertrophy were observed in 9 patients (9.1%). The average heart rate was 80 ± 11 beats per minute.

Patients of Group II were aged from 35 to 82 years, with a mean age of 62.06 ± 8.44 years; males accounted for 84.9% (n = 90), females – 15.1% (n = 16). In Group II, which included 99 patients with NSTEMI and concomitant coronary artery disease (CAD), there was also a predominance of males (84 patients, 84.8%) over females (15 patients, 15.2%).

The most representative age category among men was the 61–70 years group (40.5%), and among women it was also 61–70 years (53.3%). This indicates similar age trends in the development of NSTEMI against the background of CAD in both sexes.

Statistical analysis using the χ^2 test did not reveal significant differences in age distribution between males and females across all age intervals ($p > 0.05$). The most pronounced (though statistically insignificant) differences were observed in the 61–70 years group ($\chi^2 = 0.861$; $p = 0.354$) and in the younger age categories, where women were practically not represented.

Thus, no statistically significant differences were found in the age distribution of Group II patients by sex, which is consistent with the results obtained in Group I. All patients in Group II reported chest pain and arterial hypertension, and 83.0% of patients were overweight. A history of myocardial infarction and coronary revascularization were noted in 6 (5.7%) and 4 (3.8%) patients, respectively. Analysis of ECG data demonstrated that in patients with NSTEMI against the background of coronary heart disease, and especially in 7 (6.6%) patients in combination with acute MI, electrocardiographic changes were more pronounced and diffuse. This was manifested by a higher frequency of ST segment depression, T wave inversion, as well as the appearance of pathological Q waves and conduction disturbances (Table 2).

Table 2. *Comparative analysis of ECG changes between groups.*

Parameter	**Group I (n=94)**	**Group II (n=106)**	**χ^2**	**P**
ST depression, **n (%)**	**57 (60.6)**	**82 (77.4)**	**5.805**	**0.016**
T-wave inversion, **n (%)**	**46 (48.9)**	**74 (69.8)**	**8.197**	**0.005**
Pathological Q wave, **n (%)**	**0**	**18 (17.0)**	**15.52**	**<0.001**
Conduction disturbances, **n (%)**	**11 (11.7)**	**24 (22.6)**	**3.407**	**0.065**
Bradycardia, **n (%)**	**0**	**2 (1.9)**	**0.393**	**0.531**

Note: *p – statistical significance of differences in indicators between groups.*

The conducted comparative analysis demonstrates a statistically significant frequency of ST depression in patients of group II compared to group I (p=0.016). A similar pattern was observed with respect to T wave inversion. Compared with the frequency of T wave inversion in group I, in group II the frequency increased by 35.21% (p=0.005). Pathological Q wave was not detected in patients with NSTEMI (group I), but in NSTEMI with concomitant coronary artery disease (group II) it was observed in 17.0% of cases (p<0/001). Pathological Q waves were defined as specific ECG characteristics, with a duration exceeding 0.04 seconds, depth greater than 0.1 mV (or more than 25% of the amplitude of the R wave), and were identified in leads corresponding to the infarct zone — predominantly in V1–V4 for anterior localization, II, III, aVF for inferior, and I and aVL for lateral.

The largest number of cases with impaired conduction was detected in group II, but compared to group I, the difference was insignificant (p=0.065). A heart rate below 60 beats per minute was observed only in 2 (1.9%) patients in group II.

In group I, 93 (98.9%) patients had Killip class I and only 1 (1.1%) patient had class II. In group II, class I was found in 74 (69.8%), class II in 20 (18.9%), class III in 8 (7.5%), and class IV in 4 (3.8%) patients. As can be seen, Killip classes II–IV were found predominantly in group II, which reflects the presence of severe forms of NSTEMI.

The average value of the GRACE scale in group I was 129±13 points, in group II 140±22 points, with 141±17 points noted in 43.4% of patients.

Thus, the obtained data confirm that the severity of ECG changes in patients with NSTEMI depends on the presence of pre-existing coronary artery disease (CAD) and concomitant acute myocardial infarction (AMI). In patients with isolated NSTEMI, the changes were local and moderate in nature, whereas with the combination of CAD and AMI, diffuse and more severe electrocardiographic manifestations were observed, indicating more pronounced ischemic myocardial injury.

In patients with NSTEMI and multivessel disease, the ECG may show various changes, including ST-segment depression, T-wave inversion, or even transient ST-segment elevation. These changes, together with elevated cardiac biomarkers, help differentiate NSTEMI from unstable angina. Although in some cases the ECG may be normal, the presence of abnormal ECG results, particularly ST-segment depression or T-wave inversion, may indicate ischemia and guide treatment decisions [4].

Our study data showed that ST segment depression was recorded in 77.4% of patients in group II, which can be regarded as a high figure compared to the data of most studies. According to large cohorts and registries, the prevalence of ST depression in NSTE-ACS/NSTEMI varies significantly depending on the sample composition and inclusion criteria: from ~20–35% in non-risk-concentrated samples to significantly higher values in high-risk cohorts and in multifocal ischemia (35% at admission in the JAMA ACS study; 27.6% in the clinic; the severity of ST depression is a strong prognostic sign) [5-7]. Considering that our group II had a higher incidence of prior CAD/concomitant AMI, higher GRACE and Killip classes II–III, the rate of 77.4% should be interpreted as high and consistent with a cohort with increased risk [5-8].

Pathological Q waves indicate more extensive/transmural injury and are associated with an unfavorable profile: higher GRACE values, more frequent Killip classes II–III, and worse outcomes compared to patients without Q [9]. Even "small" new Q-waves after NSTE-ACS increase the risk of adverse events and virtually confirm infarction [9]. These observations are consistent with our results and explain the concentration of Q waves in the heavier groups. Both ST depression and abnormal Q waves are independent markers of high risk: the degree/extent of ST depression correlates with 30-day mortality and the severity of coronary atherosclerosis, including three-vessel/main stem disease [7]. In combination with clinical scales (GRACE includes Killip, HR, BP, creatinine, etc.), this strengthens the case for an early invasive strategy in high-risk patients (dynamic ischemic changes on ECG, elevated troponin, GRACE >140, etc.), as recommended by current ESC/ACC/AHA guidelines [10-12]. Therefore, in the presence of severe ST depression and/or Q waves, it is reasonable to expedite coronary angiography and consider immediate percutaneous coronary intervention (PCI) (as part of early invasive tactics); intensify antithrombotic therapy in accordance with guidelines; more strictly control risk factors and hemodynamics.

Conclusion.

1. The incidence of ST depression of 77.4% in group II is high for NSTEMI and reflects the more severe risk profile of the cohort (CAD/AMI, GRACE, Killip).
2. Pathological Q-waves are associated with more extensive lesions and a worse clinical profile (higher GRACE and Killip II–III), confirming their poor prognostic value.
3. The overall picture (ST depression ± Q waves) strengthens the rationale for an early invasive strategy and intensification of therapy in high-risk NSTEMI in accordance with current ESC/ACC/AHA guidelines.

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