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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 ВИНТИ 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 ВИНТИ 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. Корректур авторам не высылаются, 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 computer-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 საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ 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 შედეგების 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 ფხიხლებში 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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THE RELATIONSHIP BETWEEN SERUM INFLAMMATORY CYTOKINES AND HYPERLIPIDEMIC ACUTE PANCREATITIS

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Abstract.

Objective: The incidence of hyperlipidemic acute pancreatitis (HLAP) has been increasing annually. However, it is unclear whether there is a correlation between serum inflammatory factors and HLAP. This study aimed to explore the relationship between serum inflammatory factors and HLAP.

Methods: In this study, sixty patients with hyperlipidemic severe acute pancreatitis were registered from January 2020 to December 2024 at our hospital. Sixty healthy volunteers who underwent physical examination at the hospital physical examination center during the same period were selected as controls. Th1/Th2 cells, high-sensitivity C-reactive protein (hs-CRP), interleukin-17 (IL-17), tumor necrosis factor-alpha (TNF- α) were compared between two groups.

Results: The BMI level of the HLAP group was higher than that of the control group. The levels of hs-CRP, IL-17, and TNF- α in the HLAP group were higher than those in the control group.

Conclusion: High BMI, hs-CRP, IL-17, and TNF- α levels may be risk factors for HLAP.

Key words. Th1/Th2 cells, high-sensitivity C-reactive protein, tumor necrosis factor-alpha, hyperlipidemic acute pancreatitis.

Introduction.

Acute pancreatitis (AP), an inflammatory disorder of the pancreas, is the leading cause of admission to hospital for gastrointestinal disorders in the USA and many other countries [1]. Diagnosing acute pancreatitis relies upon observing characteristic abdominal imaging abnormalities [2].

Hyperlipidemic acute pancreatitis (HLAP) is a common clinical disease that can involve organs and systems throughout the body and may progress to severe acute pancreatitis, which is a dangerous disease and has a high mortality rate [3]. In recent years, domestic statistics show that hyperlipidemia has surpassed alcohol and become the second leading cause of AP. In recent years, the incidence of HLAP has been increasing, causing serious short-term and long-term harm to individuals, families and society. Therefore, how to prevent and effectively block the progression of HLAP earlier has received attention. HLAP is often ignored in its early stages. The patient's condition can easily deteriorate rapidly in the early stage, and even lead to poor prognosis. Therefore, early judgment of the patient's condition, especially the prediction of the risk of rapid progression, is of great significance to the treatment and improvement of prognosis of HLAP.

The occurrence and progression of HLAP are related to many factors, including genetics, metabolism and immunity. Chylomicrons caused by hyperlipidemia blocks pancreatic capillaries, causing free fatty acids produced by the metabolic breakdown of triglyceride lipoproteins to accumulate in the

pancreas, causing pancreatic microcirculation disorders and calcium overload, ultimately causing extensive damage to pancreatic tissue. At the same time, this process induces an inflammatory response in the body, leading to a waterfall release of inflammatory mediators, which further leads to the progression of HLAP and multiple organ dysfunction. Th1/Th2 cell balance is the basic condition for maintaining the body's normal immune response. When Th1/Th2 is imbalanced, inflammatory mediators are released in large quantities, leading to decreased immunity or excessive inflammatory responses, ultimately causing tissue damage. Research in recent years has shown that there are both immune abnormalities and abnormal Th cell differentiation in the early stages of acute pancreatitis [4]. However, Th1/Th2 cell drift and its role and mediating pathways in the rapid progression of HLAP are currently unclear and require further studies to confirm.

This study aimed to explore the relationship between serum inflammatory factors and HLAP.

Materials and Methods.

Study population:

In this study, sixty patients with hyperlipidemic acute pancreatitis were registered from January 2020 to December 2024 at our hospital. Sixty healthy volunteers who underwent physical examination at the hospital physical examination center during the same period were selected as controls. The exclusion criteria were as follows: Exclusion criteria: Combined with autoimmune system diseases; Use of immunosuppressants or glucocorticoids; Combined with allergic diseases; Combined with malignant tumors.

Definition:

The diagnostic criteria for acute pancreatitis combined with hyperlipidemia are as follows: (1) The patient meets the 2012 new Georgia Atlanta Acute Pancreatitis Classification System 2a diagnostic criteria for acute pancreatitis [5], (2) The patient has elevated triglyceride levels, if the serum triglyceride level is ≥ 11.3 mmol/L, celiac disease is present; or if the serum triglyceride level is between 5.65 and 11.3 mmol/L [6].

Measurement:

The treatment effects and occurrence of complications (hypotension, hyperkalemia, hyponatremia, muscle spasm, cardiac changes) were compared between the two groups. In addition, this study also measured indicators related to inflammatory cytokines, such as Th1/Th2 cells, hs-CRP, IL-17, and TNF- α .

All participants had blood drawn from a vein around the elbow on an empty stomach before and in the morning after hemodialysis. The collected blood was centrifuged at 2000 rpm for 20 min, and the upper serum was retained for detection.

High-sensitivity C-reactive protein (hs-CRP), interleukin 17 (IL-17), and tumor necrosis factor α (TNF- α) detection kits were purchased from Shanghai Roche. Th1/Th2 cells were detected by flow cytometry (FACSCalibur, Becton, Dickinson and Company, USA).

Statistical analysis.

SPSS20 (Inc., Chicago, IL, USA) was used for data analysis. Student's t-test was used to compare the age, body mass index (BMI), Th1/Th2 cells, hs-CRP, IL-17, and TNF- α between two groups. Chi-square test was conducted to compare the distribution of gender between two groups. A difference at $P < 0.05$ was deemed to be statistically significant.

Data analysis was performed using SPSS20 (Inc., Chicago, IL, USA). Student's t-test was used to compare age, BMI, Th1/Th2 cells, hs-CRP, IL-17 and TNF- α between the two groups. To compare the gender distribution between the two groups, the chi-square test was used. $P < 0.05$ indicates that the difference is statistically significant.

Results.

Basic demographic features:

There was no statistically significant difference in gender and age between the two groups. The difference in BMI between the two groups was statistically significant. The BMI level of the HLAP group was higher than that of the control group (Table 1).

Table 1. Comparison of the basic demographic between two groups.

Item	HLAP	Control	t/ χ^2	P
Age (years old)	40.33±3.84	40.25±2.44	0.14	0.89
BMI (kg/m ²)	25.51±1.22	23.37±1.12	10.00	< 0.01
Gender				
Male	30(50.99)	30(50.00)	0.00	1.00
Female	30(50.00)	30(50.00)		

There was no statistically significant difference in Th1, Th2 and Th1/Th2 levels between the two groups. The levels of hs-CRP, IL-17, and TNF- α in the HLAP group were higher than those in the control group (Table 2).

Table 2. Comparison of serum inflammatory cytokines between the two groups.

	Control	HLAP	t	P
Th1 ratio (%)	11.75±2.39	11.96±2.33	0.49	0.63
Th2 ratio (%)	1.25±0.32	1.17±0.36	1.29	0.20
Th1/Th2	11.31±2.03	11.35±1.38	0.13	0.90
hs-CRP (mg/L)	7.89±2.11	9.06±1.97	3.14	< 0.01
IL-17(ng/L)	40.28±1.14	46.27±1.95	20.54	< 0.01
TNF- α (pg/mL)	101.42±16.35	108.12±14.27	2.39	0.02

Discussion.

The prognosis and disease severity of PA patients with hyperlipidemia are controversial. Some reports suggest that hyperlipidemia contributes to more severe progression of blood pressure than other causes [7]. In contrast, other studies have shown that differences in disease severity are not statistically significant [8]. However, the lack of consistency between these studies (in terms of case selection, diagnostic criteria, sample

size, and triglyceride cutoffs) obscures the true nature of the disease.

The data from this study show that hyperlipidemic acute pancreatitis was associated with High BMI, hs-CRP, IL-17, and TNF- α levels. A retrospective study demonstrated that high CRP are risk factors for HLAP [9]. Whereas high BMI and were unique risk factors for HLAP in the present study. Therefore, early diagnosis and intervention treatment for obesity are essential.

Study strengths and limitations.

Strengths of this study include the accuracy of the data as there were strict inclusion and exclusion criteria. There are currently few studies on treatment options for HLAP, highlighting the novelty of this study. This study also has limitations. This study adopted a single-center retrospective design. There may be regional differences in relevant indicators between HLAP and control groups. Multicenter statistical analysis and larger samples are still needed.

Conclusion.

In conclusion, this retrospective study confirms that High BMI, hs-CRP, IL-17, and TNF- α levels may be risk factors for HLAP. Furthermore, future studies need to expand the sample size to further confirm the correlation between inflammatory factor-related indicators and HLAP.

Author contributions.

Changsheng He, Jian Liu: The research idea, design, and data are analyzed and interpreted, and the manuscript is drafted. Linhai Xu and Fanhua Sun: data collection and analysis. Changsheng He: a review of relevant literature and partial writing. Fanhua Sun, Yan Wang and Jia Lou: revision and refinement of manuscripts.

Data availability.

All data is contained in the article. The raw data will be shared upon request. Contact the corresponding author.

Declarations.

Ethics approval and consent to participate: This study was approved by the Medical Research Ethics Review Committee of the Qingdao Jiaozhou Central Hospital. Informed written consent was obtained from the patient to publish this report.

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Consent for publication.

All authors have agreed to the publication of this paper.

Competing interests.

The authors declare no competing interests.

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