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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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# CLINICAL MANIFESTATION AND EPIDEMIOLOGICAL PECULIARITIES OF LEPTOSPIROSIS AT THE MODERN STAGE IN GEORGIA

**Megrelishvili Tamar[1], Mikadze Ia[1], Kipiani Nino[1], Mamuchishvili Nana[2], Bochorishvili Tea[1], Imnadze Tamar[1], Pachkoria Elene[1], Ratiani Levan[1].**

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## Abstract.

**Introduction:** Leptospirosis is considered one of the most common zoonotic infections in the world and is characterized by distribution in countries of subtropical and tropical zones. In Georgia A sharp increase in the frequency of leptospirosis began in 2011, and the morbidity rate increased to 16.3. Also, the landscape of detected serovars changed during this period: *L.Pomona, L.icterohemorragiae*, *L.grippotyphosa, L.hebdomadis*, among them the most frequently registered - *L.pomona* -45%.

**Materials and Methods**: A recent study aimed to reveal clinical and epidemiological peculiarities of leptospirosis at the modern stage, particularly those with heightened instances post-COVID-19. From January to June 2023, we studied 62 individuals with prolonged fever (more than 5 days without catarrhal events). The cohort study was conducted at the First University Clinic of TSMU); They were hospitalized at the First University Clinic. Comparative analysis was done with previous study which was conducted in 2013-2014 The diagnosis of leptospirosis was confirmed in the case of a reliable, diagnostic Ig M titer using the ELISA method, which was performed at the Lugar Research Center.

**Results**: According to the study which was done at the First University Clinic in 2023(From January to June) leptospirosis was confirmed in 40 cases (64.5%) due to serological analysis. The age range varied from 17 to 80 years, females were 29 % and males 71% with almost equal representation from urban 54.8 % and rural 45.2% areas. The clinical spectrum of leptospirosis included pneumonia, Weil's disease, and neurological diseases. Icteric forms registered in 12.9 %, Unicteric forms in 87.1%; Pneumonia was the most common clinical syndrome in 35.5%, symptoms of CNS damage (meningitis, meningoencephalitis, meningomyelitis) were also registered 12.9% each. haemorrhagic stroke revealed in 1 (2.5% ) patient. Weil's disease in 23.6 % cases. Comparative analysis of clinical-epidemiological features from 2013-2014 to 2023 revealed changes in the frequency of clinical variants and epidemiological characteristics. Increased rate of anicteric forms of Leptospirosis have been noticed recently

**Conclusion:** The disease has expanded its distribution to urban areas, indicating a wider reach. Because of various clinical manifestation of leptospirosis. the study emphasizes the importance of diagnosing leptospirosis in cases of prolonged fever, leptospirosis with its dynamic nature and changing clinical patterns, underscores the importance of ongoing surveillance of fever of unknown origin, differential diagnosis with other diseases and prompt intervention, especially in period of post-Covid 19.

**Key words.** Leptospira; Distribution; Various forms.

## Introduction.

Leptospirosis is an infectious disease of humans and animals that is caused by pathogenic spirochetes of the genus *Leptospira*. Leptospirosis is considered one of the most common zoonotic infections in the world and is characterized by distribution in countries of subtropical and tropical zones. Leptospirosis has been recognized as a re-emerging infectious disease among animals and humans [1].

In the West, leptospirosis was described by Larrey in 1812 as *fièvre jaune* among Napoleon's troops at the siege of Cairo. The disease initially was believed to be related to the plague but not as contagious. Throughout the remainder of the 19th century, leptospirosis was known in Europe as bilious typhoid.

In 1886, Adolph Weil published his historic paper describing the most severe form of leptospirosis that would be later known as Weil disease. Weil described the clinical manifestations in 4 men who had severe jaundice, fever, and hemorrhage with renal involvement [2,3].

Every individual has a risk of getting infected as domestic and wild animals carry leptospires. Risk population varies from the healthcare professionals, animal caretakers, farmers and agricultural workers, fishermen, rodent catchers, water sports people, National Disaster Response Force (NDRF) personnel, people who volunteer in rescue operations in flood-affected areas, sanitary workers, sewage workers, etc. The clinical manifestations of leptospirosis range from flu-like illness to acute kidney failure (AKF), pneumonia, jaundice, pulmonary hemorrhages, etc. But many rare and uncommon clinical manifestations are being reported worldwide [4,5]. Leptospirosis is presented with diverse forms, including jaundice and multiorgan damage. In many patients with multiorgan dysfunction etiology, it is not easily identifiable particularly when the disease progresses very rapidly in the current situation of COVID-19 pandemic

However, the registration of sporadic cases of leptospirosis is increasing both in the US and on the European continent recently. In Europe, the incidence rate is low - 0.13 (per 100,000), but sometimes it is recorded in the form of a strong epidemic - in 2010 in Romania [6].

The registration and study of leptospirosis cases in Georgia began in the 50s of the 20th century. The following serovars were identified as etiological factors of the disease *L. automualis, L. mankarsto, L. wolffii, L. canicola*. The morbidity rate was 1.81 (per 100,000). A sharp increase in the frequency of leptospirosis began in 2011, and the morbidity rate increased to 16.3 (Figure 1). Also, the landscape of detected serovars changed during this period: *L. Pomona, L. icterohemorragiae, L. grippotyphosa, L.*

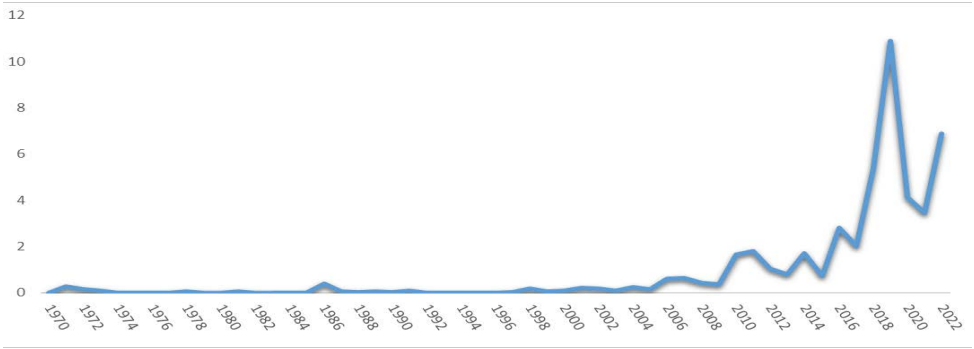


***Figure 1.*** *Morbidity with leptospirosis in Georgia in 1970-2023 (according to NCDC data).*

*hebdomadis*, among them the most frequently registered - *L. pomona* -45% [7].

Morbidity with leptospirosis in Georgia in 1970-2023 (according to NCDC data) Figure 1.

According to the epidemiological data of the NCDC, in 2023, an increase in morbidity was observed in all regions of Georgia, and a total of 611 laboratory-tested cases were recorded out of 1271 possible cases (48%), the incidence was 16.3 (100,000), and the fatal outcome was 15-(2.45%). The highest rates of cases occurred in the age group of 30-59 and <60 years, and the incidence was 19.2 - 23.9, respectively. This was due to the heavy premorbid background of the patients of the mentioned age period, and they belonged to the risk group. The main occupational groups at risk include farm workers, veterinarians, pet shop owners, field agricultural workers, abattoir workers, plumbers, meat handlers and slaughterhouse workers, coal miners, workers in the fishing industry, military troops, milkers, and sewer workers. The lethality rate was also fixed in these age groups and increased in the >60-year-old cohort (6/3.22, 9/4.52 respectively) [7]. Laboratory diagnosis of the disease is based on serological methods, such as ELISA, MAT, which are reliable specific diagnostic methods at the modern stage. The molecular-biological method is also used – PCR [8].

Expert consensus is that leptospirosis occurs as two recognizable clinical syndromes: anicteric and icteric (the existence of a third syndrome of asymptomatic infection is more controversial). Anicteric leptospirosis is a self-limited, mild flulike illness. Icteric leptospirosis, also known as Weil's disease, is a severe illness characterized by multiorgan involvement or even failure.

Due to negligence, rapid, unplanned urbanization, and poor sanitation, leptospirosis emerges as a leading cause of acute febrile illness in many of the developing countries [9]

A recent study aimed to reveal clinical and epidemiological peculiarities of leptospirosis at the modern stage, particularly those with heightened instances post-COVID-19.

## Materials and Methods.

From January to June 2023, we studied 62 individuals with prolonged fever (more than 5 days without catarrhal events). The cohort study was conducted at the First University Clinic of TSMU. Comparative analysis was done with previous study which was conducted in 2013-2014 The diagnosis of leptospirosis was confirmed in the case of a reliable, diagnostic Ig M titer using the ELISA method, which was performed at the Lugar Research Center. In a doubtful case, when a specific IgM cut-off result was obtained, the diagnosis was verified by performing a repeat analysis in a pair of sera. The data was processed statistically, SPSS 19 was used. The specific share of each sign, the standard error (SEM) and Confidence between differences was calculated.

## Results.

According to our study which was done at the First University Clinic in 2023(From January to June) leptospirosis was confirmed in 62 cases (64.5%) due to serological analysis. The age range varied from 17 to 80 years, females were 29 % and males 71% with almost equal representation from urban 54.8 % and rural 45.2% areas. The clinical spectrum of leptospirosis included pneumonia, Weil's disease, and neurological diseases. Icteric forms registered in 12.9 %; Anicteric forms in 87.1%; Pneumonia was the most common clinical syndrome in 35.5%, symptoms of CNS damage (meningitis, meningoencephalitis, meningomyelitis) were also registered 12.9% each. haemorrhagic stroke revealed in 1 (2.5%) patient. Weil's disease in 23.6 % cases.

According to the study which was done in 2013-2014 at the center of Infectious diseases - Department of Infectious Diseases of TSMU, 56 patients with leptospirosis were studied. According to the results of the conducted research, more frequent morbidity of men was revealed than that of women (78.6% and 21.4%). The age of the patients ranged from 15 to 80 years. Most of the patients were rural residents – 64.3 %, while Urban residents 35.7%. The frequency of forms with and without jaundice was almost equal (44.6% and 55.4%, respectively).

During leptospirosis with jaundice, hepatitis syndrome was diagnosed in 48.2% of them. Pneumonia was also rare - in 3.6%. C.N.S. Damage in the form of meningeal syndrome development was registered in single cases (3.6%).

The comparative analysis of clinical epidemiological data of 2013-2014- and 2023-years Table 1.

According to comparative analysis of data there is increased rate of clinical course with pneumonia and unicteric forms; increased rate of urban residents is also seen.

## Discussion.

Leptospirosis is one of the most important zoonotic bacterial diseases worldwide, commonly affecting resource-poor populations and resulting in significant morbidity and mortality. Due to negligence, rapid and unplanned urbanization, and poor sanitation, leptospirosis emerges as a leading cause of acute febrile illness in many of the developing countries

***Table 1.*** *The comparative analysis of clinical epidemiological data of 2013-2014 and 2023 years.*

| N | Number of patients among them | 2013-2014 | | | | 2023 | | | | p |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **56** | **%** | | **SEM** | **62** | **%** | | **SEM** | |
| 1 | **Male** | 44 | 78,6 | **57,2** | 6,6 | 44 | 71,0 | **42,0** | 6,3 | >0,05 |
| | **Female** | 12 | 21,4 | | | 18 | 29,0 | | | |
| 2 | **Rural** | 36 | 64,3 | **28,6** | 6,8 | 34 | 54,8 | **12,6** | 4,2 | <0,05 |
| | **Urban** | 20 | 35,7 | | | 28 | 45,2 | | | |
| 3 | **Severe cases** | 8 | 14,3 | **71,4** | 6,0 | 22 | 35,5 | **29,0** | 5,8 | <0,001 |
| | **Mild cases** | 48 | 85,7 | | | 40 | 64,5 | | | |
| 4 | **Icteric form** | 25 | 44,6 | **10,8** | 5,2 | 8 | 12,9 | 74,2 | 3,6 | <0,001 |
| | **Anicteric form** | 31 | 55,4 | | | 54 | 87,1 | | | |
| 6 | **Pneumonia** | 2 | **3,6** | | 3,2 | 22 | **35,5** | | 6,2 | <0,001 |
| 7 | **Neurology** | 2 | **3,6** | | 3,2 | 8 | **12,9** | | 4,9 | >0,05 |
| 8 | **Prolonged fever** | 0 | 0 | | - | 8 | **12,9** | | 5,0 | <0,05 |

Leptospirosis, a zoonotic disease caused by Leptospira species, primarily affects the kidneys, liver and central nervous system but can also present as a pulmonary disease. Pulmonary involvement in leptospirosis can range from mild respiratory symptoms to severe and life threating conditions, including leptospirosis-associated pneumonia and acute respiratory distress syndrome (ARDS) [10].

There are 64 recognized species (60 of these have been published under the rules of the International Code of Nomenclature of Bacteria), split into two clades and four subclades. Subclade P1(17 species) contains, alongside newly described species, those species traditionally recognized as pathogenic (*Leptospira interrogans, L. kirschneri, L. noguchii, L. alexanderi, L. weilii, L. alstonii, L. borgpetersenii, L. santarosai, L. kmetyi, and L. mayottensis*) [ 11].

New serotypes (*Leptospira Pomona*) in country should also be considered as the cause of various clinical features of the disease in Post Covid era in Georgia.

The increasing recognition of the unicteric form underscored the importance of preventive measures like vaccination (for animals in particular), improved sanitation, rodent control, and public education. Climate change and urbanization are increasing the risk of leptospirosis in both rural and urban environments [11,12]

Expert consensus is that leptospirosis occurs as two recognizable clinical syndromes: unicteric and icteric (the existence of a third syndrome of asymptomatic infection is more controversial). unicteric leptospirosis is a self-limited, mild flulike illness. Icteric leptospirosis, also known as Weil disease, is a severe illness characterized by multiorgan involvement or even failure

The clinical manifestation of Leptospirosis are highly variable and influenced by the interaction between the leptospira bacteria and the host's immune system, as well as the specific serovar involved [13]. In Georgia mostly Leptospira Pomona is registered. Understanding this complexity helps clinicians recognize and manage the disease effectively. Early-stage leptospirosis is often misdiagnosed, leading to delayed treatment, which can worsen outcomes. The timing of antibiotic administration is crucial, as early treatment can prevent progression to severe disease.

Because of various clinical manifestation of leptospirosis, the study emphasizes the importance of diagnosing leptospirosis in cases of prolonged fever, considering the epidemiological history to facilitate timely and effective treatment and prevent potential complications.

## Conclusion.

Thus, the analysis of the obtained results showed us that some clinical and epidemiological characteristics of leptospirosis have changed at the modern stage. New serotypes (*Leptospira Pomona*) in country should also be considered as the cause of various clinical features of the disease. The disease has expanded its distribution to urban areas, indicating a wider reach

because of various clinical manifestation of leptospirosis (the increased clinical course with pneumonia and the increased rate of anicteric forms of Leptospirosis), the study emphasizes the importance of diagnosing leptospirosis in cases of prolonged fever, considering the epidemiological history to facilitate timely and effective treatment and prevent potential complications. Leptospirosis, with its dynamic nature and changing clinical patterns, underscores the importance of ongoing surveillance of fever of unknown etiology, differential diagnosis with other diseases and prompt intervention, especially in period of post-COVID-19.

## REFERENCES

1. Harran E, Hilan C, Djelouadji Z, et al. Epidemiology of Leptospirosis: The First Literature Review of the Neglected Disease in the Middle East. Trop Med Infect Dis. 2022;7:260.
2. De Brito T, Silva A. M. G. D, Abreu P. A. E. Pathology and pathogenesis of human leptospirosis: A commented review. Revista Do Instituto de Medicina Tropical de São Paulo. 2018;60:e23.
3. Evangelista K.V, Coburn J. Leptospira as an emerging pathogen: A review of its biology, pathogenesis and host immune responses. Future Microbiology. 2010;5:1413-1425.
4. Gonçalves-de-Albuquerque C. F, Cunha C. M. C. D, Castro L. V. G. D, et al. Cellular Pathophysiology of Leptospirosis: Role of Na/K-ATPase. Microorganisms. 2023;11:1695.
5. Haake D. A, Levett P. N. Leptospirosis in Humans. In B. Adler (Ed.), Leptospira and Leptospirosis. 2015;387:65-97.

6. https://www.cdc.gov/index.html
7. https://www.ncdc.ge/#/hom
8. Kaushal A. Recent advances in the diagnosis of leptospirosis. Frontiers in Bioscience. 2020;25:1655-1681.
9. Lai J, Wu H, Qin A. Cytokines in Febrile Diseases. Journal of Interferon & Cytokine Research. 2021;41:1-11.
10. https://www.uptodate.com/contents/leptospirosis-epidemiology-microbiology-clinical-manifestations-and-diagnosis?topicRef=5524&source=see_link
11. Wang S, Stobart Gallagher M.A, Dunn N. Leptospirosis. In StatPearls. StatPearls Publishing. 2024.
12. Rajapakse S. Leptospirosis: Clinical aspects. Clinical Medicine. 2022;22:14-17.
13. Pongpan S, Thanatrakolsri P, Vittaporn S, et al. Prognostic Factors for Leptospirosis Infection Severity. Tropical Medicine and Infectious Disease. 2023;8:112.