

# GEORGIAN MEDICAL NEWS

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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](http://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](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.nlm.nih.gov/bsd/uniform_requirements.html)  
[http://www.icmje.org/urm\\_full.pdf](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.

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## TRANSMISSION OF RABIES VIRUS THROUGH A CONTACT LENS CONTAMINATED WITH SALIVA FROM AN INFECTED DOG (CASE REPORT)

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### Abstract.

The aim of the present work was to describe the clinical course of rabies in a 9-year-old boy with progressive rabies symptoms and fatal outcome after atypical exposure to the virus through a contact lens contaminated with saliva from an infected dog. *Epidanamnesis data.* The patient is a third-grade elementary school student, was admitted to the emergency department of Kutaisi Infectious Diseases Hospital, with fever, periodic dyspnea, malaise, headache, lacrimation, nasal congestion, sore throat, lack of appetite and insomnia. The boy became acutely ill three days before hospitalization, complaining of chills (fever up to 38.5°C), pain in the area of the right eyebrow, redness of the right eye, lacrimation and nasal congestion. In the following days, against the background of persisting symptoms, appetite decreased and sleep was disturbed. Short attacks of dyspnea, unexplained anxiety and fear of suffocation arose intermittently, mainly when drinking water.

On objective physical examination: the medical condition is moderate severity. Fever of 37.8°C. There is no evidence of skin discoloration or rash. The mucous membrane of the oropharynx is slightly hyperemic, tonsils are not enlarged, except for single enlarged but painless lymph nodes palpated in the submandibular and cervical regions. Redness of the right eye, lacrimation and photophobia are noted. The cardiac silhouette is not enlarged, heart sounds and cardiac rhythm are normal, HR 70/min, BP 100/75 mm Hg. Chest is clear to auscultation, no wheezing, respiratory rate 17/min, oxygen saturation index is within normal limits (SpO<sub>2</sub> ≥ 98% on room air). The tongue is moist, covered with white plaque. The abdomen is soft and painless on palpation without organomegaly. A full blood count (FBC) test reveals mildly elevated leukocytes of 15.0 x 10<sup>9</sup>/L, immature neutrophils count greater than 10%, urinalysis shows albuminuria, cylindroid and leukocyturia (12-15 WBCs/hpf). Neurological status: the patient is conscious, with no meningeal or focal symptoms. Gait is stable and smooth. Cranial nerves are intact. In the following days, the boy's condition began to gradually deteriorate. Clinical manifestations include pronounced signs: weakness, headache, insomnia, constant fear, lack of appetite, decreased mood, periodic feeling of “breathlessness”, keratoconjunctivitis of the right eye, photophobia, lachrymation, salivation and hyperhidrosis. When the patient drinks water in small sips, he develops a feeling of fear and fear of choking. Brief attacks of convulsive respiratory movements occur periodically at rest. Visual and tactile hallucinations are also noted. The attacks of aerophobia are inconstant. Based on the dynamics of clinical features of the disease, the diagnosis of “rabies” was established. When delving into the exposure history, important information was obtained from the patient's classmate. It was found that 15 days

before hospitalization, a stray dog had attacked the child (near the school). During the attack, the boy's lens fell out of his right eye and the dog managed to salivate it. The child rinsed the lens with running water and put it back on. On hospital day 5, the patient's condition has become more severe. Paresis of the lower extremities was pronounced. When doing the Barre test, the boy could not keep his legs in an elevated position. Flexion and extension of legs with weakened strength. He could not get out of bed. The patient developed a sudden increase in body temperature (≥39.5°C), hyperhidrosis and cold extremities. He was lethargic and had difficulty concentrating on the interviewer's questions. Symptoms of tachypnea (32 breaths per minute), blue lips and acrocyanosis were associated with increasing respiratory failure. BP - 130/90 mm Hg, HR - 100 per minute. On the background of signs of respiratory failure and hemodynamic instability, biological death was stated (about 20 days after contact with the infected dog). A postmortem study confirmed the presence of street rabies virus in a bioassay on white mice.

Typically, the incubation period for rabies ranges from 30 to 90 days. However, the entry of rabies virus onto the corneal surface can be equated to intracerebral infection, which ultimately predetermined the rapid spread of infections with a very short incubation period (only 15 days). Of note, our patient was already in the agitation period at the time of admission to the hospital, and the pathological changes in the CNS were irreversible.

In summary, this clinical case highlights the importance of considering all possible routes of rabies virus transmission and increasing clinician vigilance regarding timely epidanamnesis collection for early rabies diagnosis, as only timely post-exposure prophylaxis can save the patient's life.

**Key words.** Rabies, atypical contact lens transmission, progressive encephalitis, antirabies vaccine, hydrophobia, aerophobia, photophobia, hypersalivation, hyperhidrosis.

### Introduction.

According to WHO's statistics report, about 59,000 people die from rabies worldwide each year. Forty percent of victims are children under 15 years of age [1-11]. The reservoir of infection serves infected animals (dogs, cats, wolves, foxes, bats, etc.) that shed infectious virus into the external environment with their saliva (mostly). Disease in humans with rabies virus usually occurs by contact through the bite of rabid animals. In addition to the classical contact route, nonbiting types of virus transmission are also possible - aerogenic, alimentary, transplantation (after transplantation of corneas from the eyes of people who have died of rabies) and transplacental [2,4-7]. Given that the debut symptoms of the disease are nonspecific and at the stage of clinical manifestation (hydrophobia,



aerophobia, acousticophobia, photophobia, hypersalivation) the lethal outcome is inevitable, only timely and appropriate post-exposure prophylaxis (PEP) with a carefully collected disease history can help the patient survive, although this is not always possible [12].

We herein illustrate a case of a 9-years-old boy who has been exposed to lethal pathogen by an atypical route - through a contact lens contaminated with saliva of an infected dog (a case report).

### Case presentation.

Patient F., a 9-years-old otherwise healthy boy was admitted to the emergency department of Kutaisi Infectious Diseases Hospital, Georgia, on 10.11.16 with complaints of fever, malaise, periodic dyspnea, headache, lacrimation, nasal congestion, sore throat, lack of appetite and insomnia.

The history of the disease started acutely three days before admission to the hospital, with chills (fever up to 38.5°C), pain in the area of the right eyebrow, redness of the right eye, lacrimation and nasal congestion. In the following days, against the background of persisting complaints, appetite decreased and sleep was disturbed. Short attacks of breathlessness, unexplained anxiety and sensation of choking arose intermittently, mostly when drinking water.

**Epidanamnesis data:** The patient is a third-grade elementary school student, lives with his parents. His past medical history is significant for only acute respiratory viral infections. On objective physical examination, he is ill-looking (the medical condition of moderate severity). Fever of 37.8°C. There is no evidence of skin discoloration or rash. The mucous membrane of the oropharynx is slightly hyperemic, tonsils are not enlarged. Single enlarged but painless lymph nodes are palpated in the submandibular and cervical regions. Redness of the right eye, lacrimation and photophobia are noted. The patient wears contact lenses, carefully following the instructions for their wearing, cleaning and storing. The cardiac silhouette is not enlarged, heart sounds and cardiac rhythm are normal, HR 70/min, BP 100/75 mm Hg. Chest is clear to auscultation, no wheezing, respiratory rate 17/min, oxygen saturation index is within normal limits (SpO<sub>2</sub> ≥ 98% on room air). The tongue is moist, covered with white plaque. The abdomen is soft and painless on palpation without organomegaly. In the emergency department, a full blood count (FBC) test reveals mildly elevated leukocytes of 15.0 x 10<sup>9</sup>/L while immature neutrophils count is more than 10%, and urinalysis shows albuminuria, cylindruria and leukocyturia (12-15 WBCs/hpf).

**Neurological (mental) status:** The patient is conscious, no meningeal or focal symptoms. Gait is stable, smooth. Cranial nerves are intact. From hospital day 1, the boy's condition began to gradually deteriorate. The patient experiences weakness, headache, insomnia, constant fear, lack of appetite, decreased mood, recurrent episodes of breathlessness. He is anxious and appears depressed, sighing deeply from time to time. Right eye: keratoconjunctivitis, photophobia, lachrymation. Salivation and hyperhidrosis are also present. There is no rash on the skin. Organs and systems: no abnormality detected. Even the attempt to drink water in small sips may trigger feelings of fear and fear of choking. At rest, there are periodic short-term attacks

of convulsive respiratory movements. Signs of respiratory failure are not pronounced. Skin cyanosis is absent. Repeated consultation of a doctor neurologist: no focal pathology and meningeal symptoms. The patient is oriented in place and time, asthenized, partially bedridden. He struggles to get out of bed, cannot straighten his torso without helping himself with his arms. The boy also experiences discomfort at the sound of water running from the faucet. Neurological examination revealed that the patient is alert and oriented to person, place, and time. A patient's pupils are dilated, equal (Dextra=Sinistra) and reactive to light. There is a slight bilateral exophthalmos. Oculomotor reactions are absent. Mimicry (facial expression) is symmetrical. The patient has also difficulty in swallowing, but the soft palate contracts well during phonation. Pharyngeal reflex is active. No limb paresis. Tendon and abdominal reflexes are reduced. No pathologic reflexes. Sensory system: no abnormality detected. No signs of meningeal irritation.

Based on dynamic changes in the clinical manifestation of the disease, a diagnosis of "rabies" was made. When delving into the exposure history, important information was obtained from the patient's classmate. It was found that 15 days before hospitalization, a stray dog attacked the child (near the school) but did not bite. During the attack, the boy's lens fell out of his right eye and the dog had managed to salivate on it. The boy rinsed the lens with running water and put it back on.

By hospital day 3, the boy's condition became severe: he is anxious with fear of suffocation, periodically disoriented, acts inappropriately, striving to go home. The patient develops visual and tactile hallucinations, recurrent attacks of aerophobia. Neurologic examination is remarkable for symmetrical facial expressions, positive photoreactions, absence of nystagmus and oculomotor disturbances. In addition, the pharyngeal reflex is reduced, tendon reflexes in the upper extremities are almost not evoked while the lower extremities are characterized by increasing paresis. The Barre test shows that the raised legs drifts downwards earlier. Legs flexion and extension are performed with reduced strength. The patient has very low tendon reflexes, almost negative abdominal and pathologic reflexes, inability to get out of bed. Weakness and pain in the spinal region also persist. Absolutely refuses to drink water. Periodically disoriented. On hospital days 4 and 5, the clinical condition dramatically worsens. The patient develops a sharp spike in body temperature over 39.5°C and hyperhidrosis. Vitals are unstable with a heart rate of 100/min, blood pressure of 130/90 mm Hg and respiratory rate of 32/min. The extremities are cold. Slight cyanosis of lips and acrocyanosis are noted. He is lethargic and has difficulty concentrating on the interviewer's questions. On day 6 of hospitalization biological death was stated due to progressive respiratory failure and hemodynamic disturbances. A postmortem study revealed street isolates of rabies virus in a bioassay on white mice, thereby clinching the diagnosis.

### Discussion.

In Georgia, a wide range of wild carnivores remains the major reservoir of rabies virus circulating in all epizootic natural foci. However, transmission to human typically occurs through bites, licks, and scratches on broken skin and mucous membranes by

infected domestic animals. Intact skin is impermeable to rabies, unlike mucous membranes, which the virus can easily overcome [2-5,10]. After biting and licking, however, not all affected animals are capable of transmitting the virus. It is known that in only 50-90% of rabid animals, the virus can be detected in saliva, and its concentration (viral load) varies from trace to high titers and depends on a number of factors, but primarily on the animal species and virus strain. The presence of virus in saliva can be identified even before the clinical manifestations of disease in animals become apparent [7,9]. Abnormal behaviour is always present in infected animals [3,9]. Sick animals with aggressive behaviour are more likely to be a major source of infection to other animals and humans. In our rabies case, the source of infection was a free-roaming dog. Practically, the inoculation of rabies virus onto the corneal surface can be equated to intracerebral infection, which ultimately predetermined the rapid spread of infection with a very short incubation period. In our patient, fever and shooting ocular pain, keratoconjunctivitis, nasal congestion, lacrimation were the earliest symptoms to be interpreted as the body's response to viral invasion. In addition, the incubation period was almost 15 days. It usually lasts from 30 to 90 days. A shorter incubation period (less than 30 days) has been reported in only a quarter of patients [1-3,7,10].

In the observed clinical case, the initially obtained epidemiologic history data did not lead clinicians to suspect rabies in the patient. Moreover, reports of bites and signs of lesions from stray animals do not always receive sufficient epidemiologic evaluation, despite the obvious risk of infection. For this reason, patients do not always seek medical care in a timely manner and do not use post-exposure prophylaxis, resulting in fatalities. In the absence of rabies vigilance, clinicians not only delay hospitalization of this category of patients, but also often make erroneous diagnoses, masquerading as various syndromes [2,7,9,12]. The presented patient was hospitalized too late, only after manifestation of characteristic signs and symptoms of the disease (hydrophobia - short-term painful attacks of spastic contraction of the pharyngeal and accessory airway muscles on attempting to drink water, as well as aerophobia, photophobia, hypersalivation, hyperhidrosis, etc.).

The clinical course of rabies infection includes three periods: prodromal, agitation and paralysis. The onset of the disease symptoms is highly nonspecific and may include fever, headache, malaise, fatigue, lack of appetite, sore throat, restlessness, agitation and anxiety [1]. It is common for patients to have paresthesias, itching, soreness, and myofibrillation at the site of pathogen inoculation. Since the mucous membrane of the right eye was the entry gate of rabies infection in our patient, the disease manifested predominantly by pain in the right supraorbital region, redness of the eye, sore throat, nasal congestion, and lacrimation, which prompted hospitalization. The period of agitation represents a stage of progressive encephalitis. This period can develop in different ways [1-3,5]. Patient shows increasing signs of restlessness, agitation, anxiety. But the key symptoms are paroxysmal spastic contraction of respiratory (inspiratory) muscles, arising on various stimuli - water, light, sound, airflow, and leading to attacks of hydro-, photo-, acousto- and aerophobia, respectively. The occurrence

of these attacks is linked to increased reflex excitability. Failure to identify the exact cause of the attacks may create the illusion that they are spontaneous, which was the case with our patient. As demonstrated, bouts of hydrophobia do not form immediately. Classic episodes of hydrophobia developed 2-3 days after the patient felt difficulty in swallowing water. The presence of hydrophobic attacks among the clinical features of rabies is highly specific and thus requires mandatory exclusion of rabies infection [2-4,7,10]. Once a clinician suspects rabies in a patient, the diagnosis must necessarily be confirmed. In vivo (ante-mortem) detection methods include identification of rabies viral antigen in nuchal skin biopsy specimens using fluorescent antibodies and polymerase chain reaction testing of the virus. These studies were not performed in our case, although they are valuable for their high sensitivity. It is known that the clinical condition of the infected patient progresses to medical futility and always dies after the establishment of characteristic clinical symptoms of rabies on the background of neurodegenerative changes in the CNS.

### Conclusion.

In conclusion, our clinical case demonstrates the relevance of increasing the vigilance of clinicians with regard to all possible routes of rabies virus transmission and the vital necessity of timely collection of epidemiologic history, since fatal outcome is inevitable at the onset of typical symptoms of the disease.

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## РЕЗЮМЕ

### АТИПИЧНАЯ ПЕРЕДАЧА ВИРУСА БЕШЕНСТВА ЧЕРЕЗ КОНТАКТНУЮ ЛИНЗУ ЗАГРЯЗНЕННУЮ СЛЮНОЙ ИНФИЦИРОВАННОЙ СОБАКИ (КЛИНИЧЕСКИЙ СЛУЧАЙ)

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Описан клинический случай течения бешенства у ребенка 9 лет после атипичной передачи вируса через контактную линзу, загрязненную слюной инфицированной собаки. Эпиданамнез. Ученик третьего класса общеобразовательной школы поступил в приемное отделение в детской инфекционной больницы г. Кутаиси с жалобами на лихорадку, периодически возникающие приступы затрудненного дыхания, ощущение неполного вдоха, слабость, головную боль, слезотечение, заложенность носа, боль в горле, отсутствие аппетита и бессонницу. Заболел остро за три дня до поступления в стационар, когда отметил озноб (подъем температуры тела до 38,5°C), боли в области правого надбровья, покраснение правого глаза, слезотечение и заложенность носа. В последующие дни на фоне сохраняющихся жалоб снизился аппетит и нарушился сон. Периодически стали появляться кратковременные приступы затрудненного дыхания, чувство необъяснимой тревоги и страх задохнуться возникающее преимущественно при питье воды. При объективном обследовании: состояние средней тяжести. Температура тела 37,8°C. Кожные покровы обычной окраски, сыпи нет. Слизистая оболочка ротоглотки слегка гиперемирована, миндалины не увеличены. Пальпируются единичные увеличенные, но безболезненные подчелюстные и шейные лимфатические узлы. Наблюдается покраснение правого глаза, слезотечение и светобоязнь. Границы сердца не расширены, тоны сердца ясные, ритм правильный, ЧСС 70 в 1 минуту, АД 100/75 мм рт. ст. В легких дыхание везикулярное, хрипов нет, ЧДД 17 в минуту, показатель сатурации в пределах нормы ( $SpO_2 \geq 98\%$ ). Язык влажный, обложен белым налетом. Живот при пальпации мягкий, безболезненный. Печень и селезенка не увеличены. В клиническом анализе крови выявлен лейкоцитоз  $15,0 \times 10^9/\text{л}$  (с количеством незрелых нейтрофилов более 10%), в анализе мочи – альбуминурия, цилиндрурия и лейкоцитурия (12-15 лейкоцитов в п/зр). Неврологический статус: сознание ясное, менингеальных и очаговых симптомов нет. Походка

устойчивая, ровная. Со стороны черепно-мозговых нервов патологии не выявлено. В последующие дни состояние больного начало ухудшаться. В клинической картине четко выражены: слабость, головная боль, бессонница, постоянная чувства страха, отсутствие аппетита, снижение настроения, периодически возникающее ощущение «нехватки воздуха», кератоконъюнктивит правого глаза, фотофобия, лакримация, слюнотечение и гипергидроз. Воду пьет небольшими глотками, при этом у больного развивается чувство страха и боязнь задохнуться. Кратковременные приступы судорожных дыхательных движений периодически возникают в покое. Отмечаются зрительные и тактильные галлюцинации. Приступы аэрофобии не постоянны. На основании динамики клинических проявлений заболевания, установлен диагноз «бешенство». При поиске путей заражения вирусом бешенства, важные сведения были получены от одноклассника пациента. Было установлено, что за 15 дней до госпитализации, бродячая собака напала на ребенка (около школы). Во время нападения у мальчика выпала линза из правого глаза и собака успела ослонявить ее. Ребенок линзу промыл проточной водой и надел обратно. Через 5 дней после госпитализации, состояние пациента резко ухудшилось. Четко выражен парез нижних конечностей. В позе Барре поднятые ноги не удерживает. Стигание и разгибание ног производит с ослабленной силой. Не может встать с постели. Наблюдается резкое повышение температуры тела ( $\geq 39,5^\circ\text{C}$ ) и гипергидроз. Конечности холодные. Заторможен, на вопросы отвечает с трудом. Отмечается тахипное (32 в 1 мин.). Нерезкий цианоз губ, акроцианоз. АД 130/90 мм рт. ст., ЧСС 100 в минуту. При нарастании признаков дыхательной недостаточности и гемодинамических нарушений констатирована биологическая смерть (через 20 дней после контакта с инфицированной собакой). При постмортальном исследовании в биопробе на белых мышцах был выделен уличный вирус бешенства.

Обычно инкубационный период при бешенстве варьирует от 30 до 90 дней. Однако, попадание вируса бешенства на поверхность роговицы, можно сравнить с интрацеребральным инфицированием, что в конечном итоге и предопределило быстрое распространение инфекции с очень коротким инкубационным периодом (всего 15 дней). К сожалению, при поступлении в стационар пациент уже находился на стадии агитации и патологические изменения в ЦНС носили необратимый характер.

Таким образом, приведенное клиническое наблюдение демонстрирует актуальность повышения настороженности врачей в отношении всех возможных путей передачи вируса бешенства и жизненную необходимость своевременного сбора эпиданамнеза, так как спасти жизнь пациенту сможет только своевременно начатая постэкспозиционная профилактика.

**Ключевые слова:** бешенство, атипичная передача вируса через контактную линзу, прогрессирующий энцефалит, антирабическая вакцина, гидрофобия, аэрофобия, фотофобия, гиперсаливация, гипергидроз.