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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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DIFFERENTIATED THERAPY OF PATIENTS WITH INTRACEREBRAL COMPLICATED HEMISPHERIC ISCHEMIC CEREBRAL STROKE WITH SECONDARY BRAINSTEM HEMORRHAGES AGAINST THE BACKGROUND OF HYPERTENSIVE ENCEPHALOPATHY

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Abstract.

The purpose of the study is to assessment of the risk of secondary brainstem hemorrhages against the background of hypertensive encephalopathy in patients with intracerebral complicated hemispheric ischemic cerebral stroke using anticoagulant therapy.

Was conducted a clinical and pathological study of 97 patients with intracerebral complicated hemispheric ischemic cerebral stroke aged 41 to 87 years. Of these, 55 were men (56,7%), average age 72,5±2,4; women 42 (43,3%), average age 76,5±2,1.

Data on survival time and complications in the form of secondary brainstem hemorrhages directly correlated with the results of pathological changes in the brainstem. During autopsy of deceased patients with hemispheric ischemic cerebral stroke complicated by secondary hemorrhages of the brainstem who received anticoagulant therapy, in 12 cases (70,6%) out of 17, secondary massive hemorrhages in the brainstem were found, consisting of multiple hemorrhagic foci merging with each other. In individuals with hemispheric ischemic cerebral stroke who did not receive anticoagulant therapy, pathomorphologically, secondary massive hemorrhages in the brainstem were noted in only 12 (25,5%) of 47 deceased, while in 35 observations (74,5%), hemorrhages were determined in the form of individual hemorrhagic foci of small size or individual small-point hemorrhages, sometimes detected during macroscopic examination.

Data on the presence of hypertensive encephalopathy in the pre-stroke anamnesis directly correlated with the results of secondary pathological changes in the brainstem. At autopsy, hypertensive encephalopathy was detected in 92,2% of deceased patients with secondary hemorrhages in the brainstem, while with ischemic nature of brainstem changes only in 42,4%.

The above proves the need to take into account differentiated therapy depending not only on the nature of the damage to the hemispheric structures, but also on the pathomorphological type of secondary changes in the brainstem.

In patients with hemispheric ischemic infarction who are predisposed to complicated hemorrhagic secondary brainstem syndrome, especially those with a history of hypertensive encephalopathy, the use of anticoagulant, thrombolytic, and dual antiplatelet therapy is not recommended due to the risk of developing secondary hemorrhagic stem syndrome as a consequence of secondary changes in microvessels, which always change under the influence of high blood pressure.

Key words. Ischemic cerebral stroke, secondary brainstem hemorrhages, hypertensive encephalopathy, anticoagulant therapy.

Introduction.

Each year, about 795000 people suffer a new or recurrent stroke, of which 87% are ischemic. The number of strokes is expected to more than double between 2010 and 2050, especially among older adults and people from underrepresented racial and ethnic groups, even though stroke death rates have declined slightly over the past few decades due to advances in prevention, diagnosis, and treatment [1].

The development of clear criteria for diagnosis and tactics of therapy of patients with intracerebral complicated hemispheric ischemic cerebral stroke (ICS) is a significant task of angioneurology. In the system of urgent medical care for ICS, there are currently quite definite ideas about the effectiveness of pharmacological correction affecting the coagulating functions of the blood. In this case, preference is given to anticoagulant drugs [2-4].

However, the high percentage of hemorrhagic complications in ICS, especially of a stem nature, despite modern approaches to cases and consequences of the use of thrombolytic, anticoagulant, dual antiplatelet therapy, forms new approaches to the differentiated use of these drugs [5-8]. It should be taken into account that against the background of cerebrovascular disease, especially with respect to the severity and duration of chronic cerebral ischemia caused by arterial hypertension, hypertensive encephalopathy may be observed.

Inadequately controlled primary hypertension is the most common cause of hypertensive encephalopathy. Secondary causes of hypertension, such as kidney disorders and adrenal tumors, can also predispose to this condition. Autoregulatory mechanisms normally enable the brain to maintain adequate cerebral perfusion pressure, altering arterial and arteriolar resistance in response to physiological changes. Steep blood pressure elevation can overwhelm these mechanisms, leading to vascular wall damage, blood-brain barrier disruption, and plasma, red blood cell, and macromolecule exudation.

Hypertensive encephalopathy shares many clinical features with other syndromes giving rise to cerebral edema, such as posterior reversible encephalopathy syndrome, hypertensive brainstem encephalopathy, and eclampsia. Evaluation for underlying causes like renal disease, sympathomimetic (e.g., amphetamines and cocaine) consumption, adverse effects of drugs like immunosuppressive agents, and pregnancy-induced hypertensive states should be considered if a patient is not known to have primary hypertension [9-11].

At the same time, one of the complications of hemispheric ICS is secondary hemorrhage of the brainstem, which triggers a whole chain of pathophysiological shifts that affect the outcome

of the process. The latter can be either hemorrhagic or secondary ischemic syndromes.

The Monro-Kellie doctrine determines the balance of the three main volumes of the intracranial cavity, such as cerebrospinal fluid, brain tissue and vascular bed. Due to the rigidity of the cranial cavity, an increase in one volume causes a compensatory decrease in another [12].

The increase in the volume of the brain due to the development of a pathological focus and perifocal edema leads to a disruption of cerebrospinal fluid circulation and venous outflow from the cranial cavity. The compensatory capabilities of redistribution of cerebrospinal fluid in reserve spaces – subarachnoid, cisterns and ventricles of the brain are gradually depleted. With slow development of the pathological focus, signs of displacement (dislocation) are often observed over a long period due to intracranial reserve spaces. At the same time, with rapid expansion of the focus, a stormy clinical picture occurs, and the compensatory capabilities of the reserve spaces also quickly exhaust themselves, and ICS, as a rule, ends fatally. Even before the introduction of computed tomography into clinical medicine, numerous autopsy studies showed, according to which dislocation syndrome is the main cause of death in patients with massive ICS [13].

According to the clinical and radiological classification of dislocation syndromes, the following stages are distinguished:

Stage 1: Hypertensive-discirculatory syndrome (general condition of moderate severity, displacement of the septum pellucidum does not exceed 4 mm);

Stage 2: Hypertension-dislocation hemispheric syndrome (general condition is severe, displacement of the septum pellucidum is 4-9 mm);

Stage 3: Hypertension-dislocation brainstem syndrome (general condition is extremely severe, displacement of the septum pellucidum exceeds 10 mm) [14].

In this regard, new approaches are needed to optimize differentiated drug correction taking into account the nature of the secondary stem complication in the acute period of hemispheric ICS [15-18].

The purpose of the study is to assessment of the risk of secondary brainstem hemorrhages against the background of hypertensive encephalopathy in patients with intracerebral complicated hemispheric ischemic cerebral stroke using anticoagulant therapy.

Materials and Methods.

To achieve the set goal, we conducted a prospective-retrospective multicenter study of 97 patients with intracerebrally complicated hemispheric ICS aged from 41 to 87 years, who were treated in the neurology department and the intensive care unit of the Municipal Non-profit Enterprise "City Hospital № 6" of Zaporizhzhya City Council. There were 55 were men (56,7%), average age 72,5±2,4; women 42 (43,3%), average age 76,5±2,1.

The study lasted for 3 years and was completed by February 2022.

There were no differences in racial characteristics.

Depending on the nature of the intracerebrally complicated hemispheric ICS against the background of hypertensive encephalopathy, the patients were divided into 2 groups.

Group 1 consisted of 64 patients with ICS complicated by secondary hemorrhage of the brainstem.

Group 2 consisted of 33 patients with ICS complicated by secondary ischemic syndrome.

Inclusion criteria.

Patients with intracerebral complicated hemispheric ICS.

Exclusion criteria.

Patients with ICS not complicated by secondary brainstem hemorrhages;

Patients with ICS without concomitant hypertensive encephalopathy.

Written consent to conduct the study was obtained from each patient or his relative, in accordance with the recommendations of ethical committees on biomedical research, Ukrainian legislation on health protection and the 2000 Declaration of Helsinki, European Society Directive 86/609 on participation people in biomedical research.

Statistical processing of the study results was carried out using descriptive statistics methods using the Microsoft Excel 2010 software package. The reliability of the values was assessed according to Student's t-test. The results obtained were considered significant at a significance level of $p < 0,05$.

Results and Discussion.

In order to determine the proportion of secondary brainstem hemorrhage, the mortality structure of another 83 deceased with hemispheric ICS and hemorrhagic hemispheric ICS complicated by secondary brainstem syndrome was additionally analyzed. Of the 36 deceased with intracerebrally complicated hemispheric ICS with secondary brainstem syndromes, 11 patients had brainstem hemorrhages. Of the 47 patients with cerebral hemisphere hemorrhage, 15 patients had a secondary hemorrhagic brainstem component. Thus, in a third of deceased patients, regardless of the type of primary hemispheric lesion, secondary stem manifestations were manifested by hemorrhages in the brainstem.

However, in order to optimize differentiated treatment of ischemic infarction, further analysis of the outcomes of ICS with secondary brainstem hemorrhage and with secondary ischemic syndrome was performed depending on the use of thrombolytic, anticoagulant, dual antiplatelet therapy and the presence of hypertensive encephalopathy in the pre-stroke history.

The role of secondary hemorrhagic stem complications in the outcome of ICS is convincingly demonstrated by the data in Table 1, which demonstrates the dependence of their prognosis on the pathomorphological nature of the stem lesion in patients with hemispheric ischemic strokes.

Table 1. *Dependence of life expectancy and duration of secondary brainstem complication on its nature in patients with hemispheric ischemic cerebral strokes (M±m).*

Secondary complications of the brainstem	**Number of patients**	**Duration**	
		Secondary Brainstem Syndrome (days)	Life after illness (days)
Ischemic	33	7,67+0,71*	8,98+0,73*
Hemorrhagic	64	3,34+0,43*	4,18+0,45*

Note: **-$p < 0,05$ compared to baseline values.*

The above results show that the survival time after the disease and the survival time with hemorrhages in the brainstem are reduced by two or more times compared to secondary brainstem syndrome, not complicated by secondary brainstem hemorrhages in the brainstem, regardless of the primary hemispheric focus. In addition, the nature of secondary changes in the brainstem is more significant than primary hemispheric changes for prognosis.

Thus, every third patient with developed severe secondary brainstem syndrome may have secondary hemorrhage in the brainstem, which largely determines the resulting cerebral vascular catastrophe. Therefore, the approach to the treatment of secondary brainstem syndrome complicated by a hemorrhagic component in conditions of ICS of the hemispheres is of particular relevance. This is due to the fact that patients with primary hemorrhagic hemispheric stroke usually undergo hemostatic therapy. In case of complications with a secondary stem hemorrhagic component, the basic principles of therapy remain the same. In the conditions of intracerebrally complicated hemispheric ICS, when the nature of the latter is absolutely proven by computer and clinical data, the doctor chooses differentiated therapy, among which thrombolytic, anticoagulant and antithrombotic drugs are in one of the first places [3,6-8,17,19].

In connection with the above, the results of drug therapy of 64 patients with hemispheric ICS complicated by secondary stem hemorrhages were retrospectively analyzed.

Of the 64 patients with ICS complicated by secondary brainstem hemorrhage, 17 patients received anticoagulant therapy (before the occurrence of secondary brainstem hemorrhages) according to the generally accepted regimen against the background of basic treatment (Group 1). Moreover, patients with systolic blood pressure not exceeding 180 mm Hg and not in a comatose state at the onset of secondary stem syndrome, which was a contraindication to the administration of anticoagulants, were selected [19]. In 33 patients, only basic therapy was used in the complex treatment of complicated ICS (Group 2).

The initial data of the hemostasis system, studied in the dynamics of the acute period of ICS, characterizing simultaneously the state of the coagulation, fibrinolytic and anticoagulant systems of the blood, showed the identity of the results of these two groups of patients.

The dependence of life expectancy and duration of secondary stem complication on its nature and the use of anticoagulants in patients with hemispheric ICS is presented in Table 2.

The above results show that in patients of the 1st group, the life expectancy from the onset of the disease was 2,87+0,61 ($p < 0,05$) days, and in the 2nd group it was 4,87+0,31 ($p < 0,05$) days. In addition, the time from the onset of secondary stem syndrome to death in patients receiving anticoagulant therapy was 1,89+0,69 ($p < 0,05$) days, and in patients receiving only basic therapy 3,99+0,36 ($p < 0,05$) days. As can be seen, patients who received anticoagulant therapy had a life expectancy and duration of secondary stem syndrome almost 2 times shorter than those of individuals who did not receive this treatment ($p < 0,05$).

Data on survival time and complications in the form of secondary brainstem hemorrhages were directly correlated with the results of pathological changes in the brainstem. At autopsy of deceased patients with hemispheric ICS complicated by secondary hemorrhages of the brainstem, who received anticoagulant therapy, in 12 cases (70,6%) out of 17, secondary massive hemorrhages in the brainstem were found, consisting of multiple hemorrhagic foci merging with each other. In individuals with hemispheric ICS who did not receive anticoagulant therapy, pathomorphologically, secondary massive hemorrhages in the brainstem were noted in only 12 (25,5%) of 47 deceased, while in 35 observations (74,5%), hemorrhages were determined in the form of individual hemorrhagic foci of small size or individual small-point hemorrhages, sometimes detected during macroscopic examination.

Of interest was the analysis of the dependence of hemorrhagic stem complications on the presence of a history of hypertensive encephalopathy in patients with hemispheric ICS.

The frequency of hemorrhagic stem complications on the presence of a history of hypertensive encephalopathy in patients with hemispheric ICS is presented in Table 3.

Table 2. *Dependence of life expectancy and duration of secondary stem complication on its nature and use of anticoagulants in patients with hemispheric ischemic cerebral strokes (M±m).*

Secondary complications of the brainstem	**Use of anticoagulants**	**Number of patients**	**Duration**	
			Secondary Brainstem Syndrome (days)	Life after illness (days)
Ischemic	Anticoagulants	12	7,5+0,96	8,7+0,93
	Without anticoagulants	21	6,7+0,72	7,7+0,79
Hemorrhagic	Anticoagulants	17	1,89+0,69*	2,87+0,61*
	Without anticoagulants	47	3,99+0,36*	4,87+0,31*

Note: **-p < 0,05 compared to baseline values.*

Table 3. *Frequency of hemorrhagic stem complications from the presence of a history of hypertensive encephalopathy in patients with hemispheric ischemic cerebral strokes (M±m).*

Secondary complications of the brainstem	**Presence of hypertensive encephalopathy**	**Number of patients**	**Hemorrhagic stem complications**
Ischemic	Hypertensive encephalopathy	14	42,4%
	Without hypertensive encephalopathy	19	57,6%
Hemorrhagic	Hypertensive encephalopathy	59	92,2%*
	Without hypertensive encephalopathy	5	7,8%*

The above data on the presence of hypertensive encephalopathy in the pre-stroke anamnesis directly correlated with the results of secondary pathological changes in the brainstem.

At autopsy, hypertensive encephalopathy was detected in 92,2% of deceased patients with secondary hemorrhages in the brainstem ($p < 0,05$ compared to secondary hemorrhages of the brainstem without hypertensive encephalopathy 7,8%), while with ischemic nature of brainstem changes only in 42,4%. Apparently, the preparedness of the cerebral vessels after arterial hypertension is also important for predicting the consequences of not only the use of anticoagulant therapy, but also for the use of thrombolytic and dual antiplatelet therapy

All secondary hemorrhages into the brainstem were combined with ischemia, pronounced edema and deformation of the brainstem. In this case, under conditions of hypoxic changes in the area of the brainstem focus and around it, diapedesis of leukocytes occurs, and then erythrocytes into the area of the secondary brainstem focus or along its periphery. The necessary prerequisites for hemorrhagic impregnation are a slowdown in blood flow, which occurs with rapid dislocation and compression of arteries, veins and capillaries, and subsequently stasis, anoxia and impaired vascular permeability directly in the area of secondary stem lesions. Secondary massive hemorrhages, mainly of arterial origin, were characterized by the presence of multiple hemorrhagic foci merging with each other, with rupture of arteries in the center of these formations or with severe necrobiotic changes in the walls of arteries and veins. Anticoagulants have a clear ability to trigger these mechanisms or to aggravate existing hemorrhagic secondary manifestations in the brainstem.

Conclusion.

1. Summarizing the above results of differentiated therapy, it can be concluded that, despite the improvement of the condition in the area of the hemispheric ischemia focus due to the optimization of the rheological properties of the blood and its increased inflow, there is a threat of additional complications outside the main focus caused by the use of this therapy. At the same time, in the brainstem, in conditions of dislocation, hemorrhagic complications can be caused, or existing ones can be aggravated.

2. The above proves the need to take into account differentiated therapy depending not only on the nature of the damage to the hemispheric structures, but also on the pathomorphological type of secondary changes in the brainstem.

3. In patients with hemispheric ischemic infarction who are predisposed to complicated hemorrhagic secondary brainstem syndrome, especially those with a history of hypertensive encephalopathy, the use of anticoagulant, thrombolytic, and dual antiplatelet therapy is not recommended due to the risk of developing secondary hemorrhagic stem syndrome as a consequence of secondary changes in microvessels, which always change under the influence of high blood pressure.

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