GEORGIAN MEDICAL NEWS

ISSN 1512-0112

NO 1 (358) Январь 2025

ТБИЛИСИ - NEW YORK

ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

Monthly Georgia-US joint scientific journal published both in electronic and paper formats of the Agency of Medical Information of the Georgian Association of Business Press. Published since 1994. Distributed in NIS, EU and USA.

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.

GEORGIAN MEDICAL NEWS
No 1 (359) 2025

Содержание:

Larisa Melia, Revaz Sulukhia, Natia Jojua, Tinatin Gognadze, Nino Davidova.
PRETERM BIRTH PREVENTION IN MULTIFETAL PREGNANCIES: A RETROSPECTIVE STUDY ON CERVICAL PESSARY EFFICACY……..6-10

Ketevan Tsanava, Lali Khurtsia, Elene Shengelia, Gvantsa Qvariani, Luka Dangadze.
DIAGNOSTIC CHALLENGE: COEXISTING MULTIPLE MYELOMA AND EXTRAMEDULLARY PLASMACYTOMA WITH RENAL ANDHEPATICINVOLVEMENT…….11-14

Alghamdi Thamer, Khallufah Ahmed, Alghamdi Adel, Mohammed Al Shareef, Alzahrani Alaa, Alzahrani Faisal, Alghamdi Khader, Alghamdi Anmar.
PREVALENCE, PATTERN, RISK FACTORS, AND MANAGEMENT OF ABDOMINAL AND INGUINAL HERNIAS IN KING FAHAD HOSPITAL AT AL-BAHA CITY, SAUDI ARABIA 2024…….15-21

Samsonia M.D, Kandelaki M.A, Giorgadze T.A.
TRANSMISSION OF RABIES VIRUS THROUGH A CONTACT LENS CONTAMINATED WITH SALIVA FROM AN INFECTED DOG (CASEREPORT)…….22-25

M.K. Osminina, N.S. Podchernyaeva, V. A. Seraya, S.K. Kurbanova, O.V. Batureva, S.N. Chebusheva, O. V. Shpitonkova, A.V. Polyanskaya, A.A. Skakodub, N.K. Ziskina.
EFFICACY AND TOLERABILITY OF JANUS KINASE INHIBITOR TOFACITINIB IN JUVENILE LINEAR SCLERODERMA. CASE SERIES OF 5 PATIENTS……..26-30

Huda Saif Al Dhaheri, Mohammad Fareed Khan.
OCULAR MANIFESTATIONS IN A PATIENT WITH HIDRADENITIS SUPPURATIVA: A CASE STUDY…..31-34

Hawar Sardar Hassan, Ahmed J. Allami, Duha Emad Taha, Hany Akeel Al-Hussaniy.
BETTER DIAGNOSIS OF STROKE USING DIFFERENT B-VALUES IN MAGNETIC RESONANCE IMAGING……..…….35-39

Tchernev G, Broshtilova V3, Kordeva S.
INNOVATIONS IN DERMATOLOGIC SURGERY AND MELANOMA PATHOGENESIS: FROM THE PERSONALISED SURGERY TO THE CONCEPT OF GENOMIC MAPPING/ TARGETING VIA NITROSAMINES IN DRUGS: SPOTLIGHT ON CONTAMINATION OF ANGIOTENSIN CONVERTING ENZYME INHIBITORS (ACES) AND ANGIOTENSIN RECEPTOR BLOCKERS (ARBS)……..….40-46

Yu.V. Boldyreva, I.A. Lebedev, E.V. Zakharchuk, E.A. Babakin, I.A. Aptekar.
CONGENITAL HYPOTHYROIDISM: FROM THEORY TO PRACTICE- A CLINICAL CASE…….47-49

Zana Lila, Sokol Krasniqi, Afrim Gjelaj, Jacques Veronneau.
COMPARATIVE ANALYSIS OF ENAMEL SURFACE WEAR INDUCED BY TWO CONCENTRATIONS OF ZIRCONIA PARTICLE TOOTHPASTE UNDER TWO ELECTRIC TOOTHBRUSHING MODALITIES…….50-56

Rebecca Mills, Mohammad Zain Sohail, Hammad Sadique, Oliver Adebayo, Kanatheepan Shanmuganathan, Georgios Mamarelis, Shahanoor Ali, Ahmed Sanalla, Frank Acquaah, Abid Ali, Sadhin Subhash.
VALID AND INFORMED CONSENT IN ORTHOPAEDIC SURGERY: A MULTICENTRE, REGIONAL SERVICE EVALUATION OF CURRENT UK PRACTICE…….57-69

George Shaburishvili, Nikoloz Shaburishvili, Solomon Zeikidze.
PROPORTION OF HEART FAILURE PATIENTS RECEIVING GUIDELINE RECOMMENDED DOSES OF BETA BLOCKERS IN GEORGIA: A STUDY ON TITRATION AND TOLERABILITY…….70-77

Chaima Jemai, Haifa Zaibi, Tesnim Farhat, Nesrine Dhieb, Achwak Mehrez, Mouna Djebbi, Zohra Hadj Ali, Yosra Htira, Faika Ben Mami.
STUDY OF THE ASSOCIATION BETWEEN ASTHMA, WEIGHT STATUS AND NUTRITIONAL INTAKE: RESULTS OF A TUNISIAN PILOTSURVEY…….78-85

Robizon Tsiklauri, Tamar Jankhoteli, Maiko Chokheli, Ani Khachidze, Lela Kazarashvili, Nino Chkhaberidze, Ketevan Kavtaradze, Emzari Chachua, Mariam Vardoshvili.
HEALTH RISK-FACTORS ASSOCIATED WITH LEAD EXPOSURE IN THE KVEMO KARTLI REGION OF GEORGIA…….86-94

Najafbayli N.V.
SEMANTICS AND DYNAMICS OF HEADACHE IN PATIENTS WITH CHIARI MALFORMATION TYPE I AFTER DECOMPRESSION SURGERY: EXPERIENCE FROM AZERBAIJAN…….95-100

Hussamaldin Mohamed, Abdelmushin Abdelgadir, Ashraf Ismail, Osman Elsadig, Kiran Gopinath, Mosab Omer, Ayman Alfeel, Elryah. I. Ali, Mohamed M. Almaki, Ammar Abdelmola, Hussam Ali Osman, Huda Al-Obaidi, Abdelgadir Elamin Eltom, Marwan Ismail.
EXPLORING THE ROLE OF C-REACTIVE PROTEIN IN PREECLAMPSIA AMONG HYPERTENSIVE PREGNANT WOMEN….101-105

Tamar Shervashidze, Rusudan Kvanchakhadze, David abuladze, Liana Jashi, Miranda Shervashidze, Ilona Sakvarelidze, Manana Makharadze, Iamze Taboridze.
THE IMPACT OF BARIATRIC SURGERY ON TYPE 2 DIABETES MELLITUS REMISSION IN THE GEORGIAN POPULATION……106-112

Wilfredo Chaviano-de la Paz, Dayani Arteaga-Guerra, Luis Enrique Remedios Carbonell, Raikel Fardales Rodriguez, Maidelis Prieto-Guerra, Michel Guillermo-Segredo, Maikel Santos-Medina, Geovedys Martinez-Garcia, Miguel Alejandro Rodríguez-Ramos.
TEN-YEAR TRENDS IN REVASCULARIZATION, IN-HOSPITAL TREATMENTS, AND OUTCOMES IN PATIENTS WITH STEMI……...113-120

Kubaevskaya D. M, Olennikov P. A, Ishmaev S. A, Balakireva E. V, Labazanov D. U, Boguslavets S. L, Beskadarov V. I, Zhidkov S. A, Budeykina I. N, Komolov D. A.
FORMATION OF ARTIFICIAL BURNS IN WISTAR RATS TO EVALUATE THE EFFECTS OF DIFFERENT DRUGS…….....121-122

Tatiana V. Kirichenko, Irina Yu. Yudina, Maria V. Lukina, Tatiana B. Andrushchishina, Natalia V. Elizova, Alexander M. Markin, Yuliya V. Markina.
IMMUNE RESPONSE OF CULTURED MONOCYTES OF ATHEROSCLEROTIC PATIENTS RECEIVING STATIN THERAPY.....123-128

Yurko K.V, Chekhovska G.S, Gradil G.I, Katsapov D.V, Merkulova N.F, Mohylenets O.I, Bodnia I.P, Burma Ya.I, Tsyko O.V, Onikiienko O.L, Gargin V.V.
DIAGNOSTIC MANAGEMENT OF PATIENTS WITH ONYCHOMYCOSES…….....….129-133

Alyaa Abdulameer, Marwa Abdulzahra, Zainb Adel hashim.
VARIATION OF ASTIGMATISM BETWEEN TEMPORAL AND SUPERIOR APPROACH IN PHACO SURGERY…….....……134-137

Encarnación David Velásquez-Pasapera, Sofía Romero-Mederos, Jose Antonio Paredes-Arrascue.
INTEROPERABILITY IN PERUVIAN BLOOD BANKS: PERCEPTION AND CHALLENGES FOR THE IMPLEMENTATION OF AN INTEGRATED INFORMATION SYSTEM…….....……..138-142

Tchernev G, Broshtilova V, Kordeva S.
POLYPHARMACY, DRUG RELATED NITROSAMINE CONTAMINATION (BISOPROLOL/ PROPAFENONE) AND THE LINK TO LICHEN PLANUS/ SUBSEQUENT DEVELOPMENT OF KERATINOCYTE AND MUCOSAL CANCER/ ORAL LEUKOPLAKIA: PRESENTATION OF THE FIRST CASE AND UPDATE ON THE NEW PATHOGENETIC VISION….....……..143-150

Ayhan Verit, Fatma Ferda Verit.
“SCREAM” OF CYSTOLITHOTOMY IN HISTORY OF ART: PATIENT PERSPECTIVE…….....……..…..151-153

M.A. Rustamzade, N.M. Amiraliyev, K.N. Amiraliyev.
EFFICIENT RECONSTRUCTION METHOD SELECTION IN LOWER LIP CANCER…….....…….154-157

Chaima Jemai, Radhouane Gharbi, Hajer Kandara, Ines Kammoun, Manel Jemel, Olfa Berriche, Faten Mahjoub, Henda Jamoussi.
OBESITY AND THYROID FUNCTION IN OBESE WOMEN: A PILOT STUDY…….....……..……..158-162

Nazaryan R.S, Sosonna L.O, Iskorostenska O.V, Storozheva M.V, Fomenko Yu.V, Heranin S.I, Ohurtsov O.S, Nikonov A.Yu, Alekseeva V.V.
ANATOMICAL FEATURES OF THE OSTIOMEATAL COMPLEX AND THEIR IMPACT ON COMPLICATIONS IN DENTAL IMPLANTATION…….....…….....……..……..163-167

GEORGIAN MEDICAL NEWS
No 1 (358) 2025

EXPLORING THE ROLE OF C-REACTIVE PROTEIN IN PREECLAMPSIA AMONG HYPERTENSIVE PREGNANT WOMEN

Hussamaldin Mohamed[1], Abdelmushin Abdelgadir[2], Ashraf Ismail[3], Osman Elsadig[4], Kiran Gopinath[5], Mosab Omer[6], Ayman Alfeel[5], Elryah. I. Ali[7], Mohamed M. Almaki[8], Ammar Abdelmola[9], Hussam Ali Osman[10], Huda Al-Obaidi[5], Abdelgadir Elamin Eltom[5], Marwan Ismail[5]*.

[1]*Clinical Scientist, Al Qasimi Women and Children Hospital, Purelab, Sharjah, United Arab Emirates.*

[2]*Department of Biology Faculty of Science University of Hail, Saudi Arabia.*

[3]*Cardiology Fellow, Al Qassimi Hospital, Sharjah, United Arab Emirates.*

[4]*Primary Health Care Corporation, Al Wakrah, Qatar.*

[5]*Department of Medical Laboratory Sciences, College of Health Sciences, Gulf Medical University.*

[6]*Faculty of medical laboratory sciences, Clinical chemistry department, Shendi university.*

[7]*Department of Medical Laboratory Technology, College of Applied Medical Sciences, Northern Border University, Arar, Saudi Arabia.*

[8]*Jazan University college of nursing and health sciences department of medical laboratory technology.*

[9]*Department of Medical Laboratory Technology, College of Nursing and Health Sciences, Jazan University, Gizan,45142, Saudi Arabia.*

[10]*Faculty of Medical and Health Sciences, Liwa College, Abu Dhabi, UAE.*

Abstract.

Introduction: Preeclampsia (PE), a major cause of maternal and fatal morbidity and mortality, affects 4-5% of human pregnancies, characterized by elevated blood pressure and proteinuria after 20 weeks.

Objective: The current study sought to investigate a potential link between high CRP levels and the probability of pregnant women to develop PE.

Methods: The study involved 50 pregnant women with PE symptoms and 30 control women without symptoms, collecting serum samples and data via questionnaire.

Results: The most common age group for this study was 31 to 40 years. The majority of the studied women belong to ethnic groups of Northern Sudan ancestry (52%). The majority of women in the pre-eclampsia group were in their third trimester (54%). Among the fifty women with PE, 35 (70%) tested positive for CRP, while 15 (30%) tested negative. Four (13.3%) participants in the control group tested positive for CRP, while 26 (86.6%) were negative.

Conclusion: This study concluded that C-reactive protein (CRP) serves as a valuable predictive marker for the onset of PE. The strong correlation between CRP levels and the incidence of PE suggests that monitoring CRP could help identify women at higher risk for this condition. Additionally, the link between CRP presence and the number of prior PE cases indicates that women who have experienced PE in previous pregnancies may be more susceptible to recurrence, with CRP potentially aiding in early detection. The study discovered no significant effect of ethnic group on the development of pre-eclampsia.

Key words. CRP, ethnic group Hypertensive, PE, proteinuria.

Introduction.

Preeclampsia (PE), with or without severe features, is a disorder of pregnancy associated with new-onset hypertension, usually with accompanying proteinuria, which occurs most often after 20 weeks of gestation and frequently near term [1]. One of the main causes of maternal and fetal morbidity and mortality during pregnancy is PE, a pregnancy complication. Numerous etiologies have been connected to PE, including abnormal trophoblast invasion of uterine blood arteries and immunological intolerance between fetal and maternal tissues [2]. The pathophysiology of PE is thought to involve inflammation and endothelial cell failure [3,4]. During PE, there is a widespread activation of circulating leukocytes, which is indicative of inflammation. Furthermore, PE women have been found to have elevated levels of inflammatory cytokines and CRP [5].

PE is a condition that typically starts after the 20th week of pregnancy and is related to increased blood pressure and protein in the mother's urine (as a result of kidney problems). PE affects the placenta, and it can affect the mother's kidney, liver, and brain. When PE causes seizures, the condition is known as eclampsia, the second leading cause of maternal death in the U.S. Preterm birth, placental abruption, intrauterine growth restriction, fetal distress, and fetal death in utero are all linked to PE, a major cause of maternal morbidity [6].

The circulating amounts of C-reactive protein (CRP), an annular (ring-shaped) pentameric protein present in the plasma, increase in response to inflammation. Following the release of interleukin-6 by T cells and macrophages, this hepatic acute-phase protein rises. Its physiological function involves attaching itself to lysophosphatidylcholine expressed on the surface of dead or dying cells (as well as certain bacteria) in order to trigger the complement system through C1q [7].

Women with pre-existing, or chronic, high blood pressure are more likely to have certain complications during pregnancy than those with normal blood pressure. On the other hand, some pregnant women experience high blood pressure, which is commonly referred to as gestational hypertension [8].

The effects of high blood pressure range from mild to severe. High blood pressure can harm the mother's kidneys and other organs, and it can cause low birth weight and premature delivery. In the most serious cases, the mother develops preeclampsia-or "toxaemia of pregnancy"-which can threaten the lives of both

the mother and the fetus. There is no proven way to prevent PE. Most women who develop signs of PE, however, are closely monitored to lessen or avoid related problems. The way to "cure" PE is to deliver the baby. lives of both the mother and the fetus [9].

In this study, the prevalence of C reactive protein was investigated in relation to age and ethnic group, the potential role of CRP levels in inducing PE in hypertensive pregnant women who were attending Omdurman Maternity Hospital, and the relationship between blood CRP levels and proteinuria were evaluated.

Materials and Methods.

This study was cross-sectional and was carried out at Omdurman Maternity Hospital (OMH), Khartoum state during the period May to July 2010. The study included fifty pregnant patients who were presenting to Omdurman Maternity Hospital with PE symptoms, proteinuria over normal (30 mg/dl), and raised blood pressure above normal (120/60 mmHg). Additionally, 30 pregnant women who did not exhibit any PE symptoms or other illnesses were included in the control group.

A questionnaire was utilized to gather additional data from the participants in this study. Five milliliters of blood were drawn from each participant in a simple container, centrifuged, and the serum separated into a different plain container before being stored in a freezer.

With the assistance of the registrars and doctors at Omdurman Maternity Hospital, where the patients were admitted, the written informed consent form was explained to and signed by each participant. For the qualitative and semi-quantitative measurement of CRP in patient serum, samples were analyzed using the fast latex slide agglutination method. For the detection of proteinuria in pregnant women's urine, urinalysis test strips (SD uroColor) were employed. A P-value < 0.05 was deemed statistically significant after data analysis using SPSS software.

Results.

Eighty women attending Omdurman Maternity Hospital were recruited for this study: 50 women with PE and 30 women free from pre-eclampsia signs as control group.

Ages of women with pre-eclampsia ranged between 17 to 42 years with mean age of 28.9 years. The most frequent age group was from 31 to 40 years. Among the control group ages ranged from 17 to 39 years with mean age of 25.3 years. The most frequent age group was from 21 to 30 years (Table 1). Statistical analysis revealed significant difference in the distribution of age groups among the two studied groups ($p = 0.01$).

Table 1. *Distribution of the studied population according to age group.*

AGE Group	Cases	Control
10 - 20	11 (22.00%)	9(30.00%)
21 - 30	21(42.00%)	17(56.67%)
31 – 40	15(30.00%)	4(13.33%)
41 – 50	3(6.00%)	0(00.00%)
Total	50(100%)	30(100%)
Mean ± SD	28.9 ± 7.81	25.3 ± 1.78

According to our data, the North recorded the largest percentage of instances (52.0%), followed by the Middle (20.00%), while the South (12.00%), East (10.00%), and West (6.00%) had the lowest percentages. The control group, on the other hand, had a distinct distribution, with a comparatively higher percentage of participants from the Middle (23.33%) and West (16.67%) but none from the South (0.00%) (Table 2).

Table 2. *Distribution of the population according to tribe location.*

Tribe origin	Cases	Control
NORTH	26 (52.00%)	14 (46.67%)
SOUTH	6 (12.00%)	0(0.00%)
EAST	5(10.00%)	4(13.33%)
WEST	3(6.00%)	5(16.67%)
MEDDILE	10 (20.00%)	7(23.33%)
total	50(100%)	30(100%)

Based on gestational age, the women under study were divided into three groups. The third trimester was when the majority of the women in the PE group were. Women in the control group were split equally across the three trimesters (Table 3). A statistical analysis showed that the gestational age had a substantial impact on the development of pre-eclampsia ($p = 0.001$).

Table 3. *Distribution of the population according to gestational age.*

Trimester	Cases	Control
1	6(12.00%)	10(33.33%)
2	17(34.00%)	10(33.33%)
3	27(54.00%)	10(33.33%)
Total	50(100%)	30(100%)

**P-value = 0.001*

Among the 50 women with PE, 35 subjects were tested positive for CRP and 15 subjects were CRP negative. Among the control group, 4 subjects tested positive for CRP and 26 were CRP negative. Statistical analysis showed significant correlation between PE and presence of CRP (Figure 1). For the purpose of statistical analysis, when CRP were detected, levels were identified as low (6 mg/dl), moderate (12 mg/dl) and high (> 24 mg/dl). The CRP levels of 15, 5, and 15 patients in the pre-eclampsia group were low, moderate, and high, respectively.

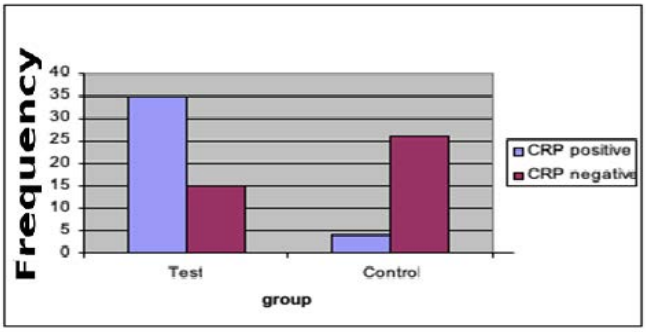

Figure 1. *CRP among PE and control groups.*

All 4 subjects who tested positive for CRP have low levels (Figure 3.1).

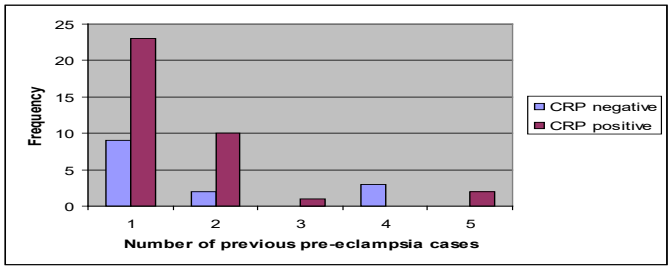

Figure 2. *CRP in relation to number of PE cases.*

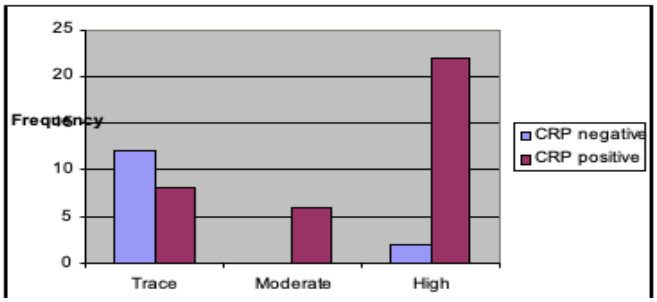

Figure 3. *CRP in relation to proteinuria levels.*

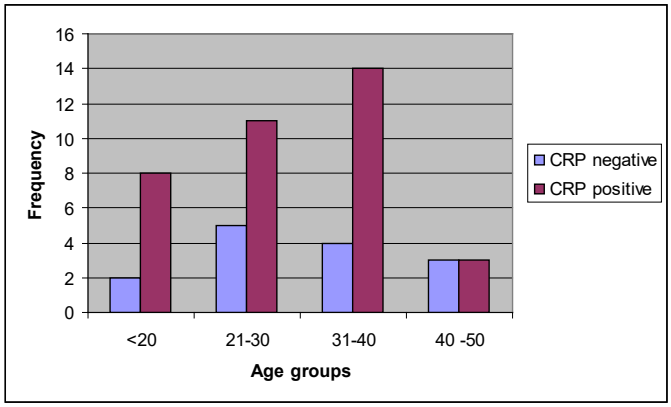

Figure 4. *Distribution of CRP negative and positive subjects with PE among different age groups.*

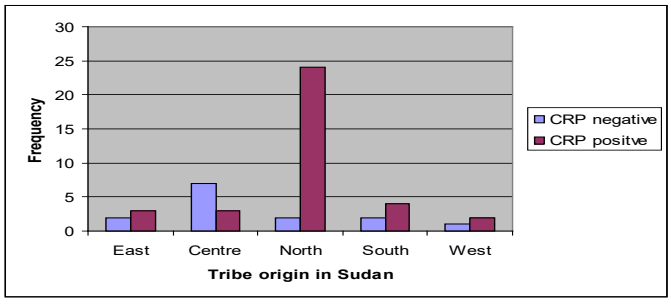

Figure 5. *Distribution of CRP negative and positive subjects with PE according to ethnic group location in Sudan.*

None of the subjects in the control group has signs of PE in their previous pregnancies. However, among the pre-eclampsia group 32 subjects had a history of one PE case, 12 had two previous cases, 1 had 3 cases, 3 had 4 cases and 2 subjects had 5 previous cases (Table 4). Among subjects with PE who tested negative for CRP, 9, 2 and 3 subjects had 1,2 and 4 previous PE cases. Among CRP positive subjects 23, 10, 1 and 2 subjects had

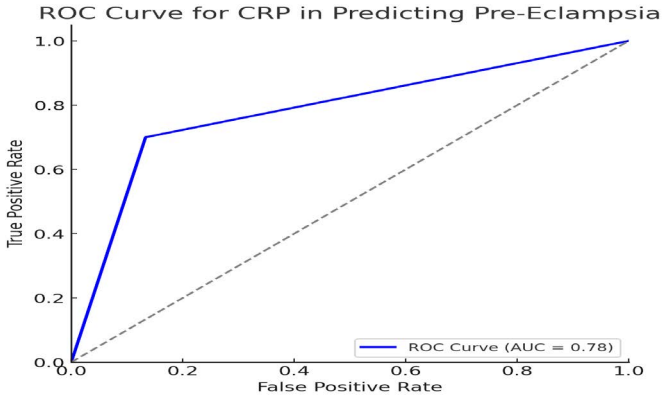

Figure 6. *Indicated a moderate diagnostic ability of CRP in distinguishing between PE and control groups with an AUC (Area Under the Curve) of approximately 0.78.*

Table 4. *Frequency of previous PE cases in PE and control groups.*

Number of previous PE cases	Frequency	
	PE group	Control group
0	0(0.00%)	30(100%)
1	32(64.00%)	0(0.00%)
2	12(24.00%)	0(0.00%)
3	1(2.00%)	0(0.00%)
4	3(6.00%)	0(0.00%)
5	2(4.00%)	0(0.00%)
Total	50(100%)	30(100%)

Table 5. *CRP in relation to the history of abortion.*

		No of Abortion			Total
C reactive protein		0	1	2	
Negative	Count	11	3	0	14
	% of Total	22.0%	6.0%	.0%	28.0%
Positive	Count	25	7	4	36
	% of Total	50.0%	14.0%	8.0%	72.0%
Total	Count	36	10	4	50
	% of Total	72.0%	20.0%	8.0%	100.0%

1, 2, 3 and 5 previous PE cases (Figure 3.2). Statistical analysis revealed significant correlation between number of previous PE cases and presence of CRP (P = 0.001).

Levels of proteinuria were placed into 3 groups: trace (5 mg/dl), moderate (30 – 300 mg/dl) and high (> 2000 mg/dl) (Section 3.6.2.2). Among subjects with PE who tested negative for CRP 12 had trace proteinuria and 2 subjects had elevated levels. Among CRP positive subjects 8,6 and 22 women had trace, moderate and high proteinuria levels (Figure 3). Results indicated significant association between presence of CRP levels of proteinuria (P=0.0001).

Number of abortions during previous pregnancies was recorded for the studied subjects. Among women with PE who tested negative for CRP, 11 subjects had no abortions and 3 had one abortion during their previous pregnancies. Among women who tested positive for CRP, 25, 7 and 4 subjects had no, one and two abortions during their previous abortions. (Table 5) Results revealed no significant relationship between presence of CRP and history of abortion (P = 0.4).

Most of the subjects who tested negative for CRP were in the age group 21 – 30 years. However, the age group 31 – 40 years was the most frequent among CRP positive subjects (Figure 4). Results showed no significant difference in the distribution of CRP negative and CRP positive subject among different age groups (P = 0.54).

Most of the studied subjects who tested negative for CRP 7(50%) belong to ethnic groups of central Sudan origin. However, ethnic groups of Northern Sudan were more frequent 24 (66.6%) among subjects tested positive for CRP. (Figure 5) There was significant difference in the distribution of CRP negative and positive subjects among different ethnic groups (P = 0.006).

Discussion.

PE is one of the common pregnancy complications after the 20th week. If untreated it may lead to eclampsia, a life-threatening condition. The frequency of pregnancy related deaths in Sudan are among the highest in the region. Among the major pregnancy complications leading to death is PE which later on lead to Eclampsia. Identification of a predictive marker for eclampsia will help in management of the case.

Results of the current study indicated significant correlation between incidence of PE and presence of CRP suggesting that CRP can be used as predictive marker for PE. Moreover, presence of CRP was significantly correlated to the number of PE cases to which the studied women exposed to during their previous pregnancies.

The North has a high prevalence of cases of systemic inflammation, possibly due to genetic predisposition, dietary habits, or environmental factors. This could increase CRP levels. Regional disparities in metabolic disorders, obesity, and diabetes may also contribute to these differences. The South has a low representation in cases and is absent in the control group. West and East individuals have lower case prevalence but better representation.

Numerous but not all studies have reported finding elevated CRP among women with PE as well as prior to evident clinical symptoms and as much as 30 years postpartum [5]. In a review about CRP and PE, serum CRP was reported to be correlated with maternal pregnancy body mass index (BMI). women who developed PE later had greater CRP levels than control women [2]. Moreover, Cebesoy et al 2005 found that CRP levels were significantly higher in severe PE and eclampsia groups than in mild PE group [10].

Results suggested significant effect of the gestational age on development of PE, as most of pregnant women developed PE towards their last trimester with no significant variation in the distribution of CRP levels in the three trimesters. This observation is an agreement with the established finding that PE tends to set after the 20th week of pregnancy, but the predictive CRP levels elevate as early as during the first trimester [11].

The present study indicated significant association between presence of CRP and levels of proteinuria. In a similar large-scale study done by seki, 2007, data were collected from 20,077 individuals in Japan. The number of positive proteinuria cases increased from 5.2 % in subjects with low CRP to 12.3 % in those with high CRP levels [12].

With an AUC (Area Under the Curve) of roughly 0.78, the ROC curve for CRP in predicting pre-eclampsia (PE) shows a reasonable diagnostic capacity of CRP in differentiating between PE and control groups as shown in Figure 6.

These findings suggest that screened individuals with high CRP levels may need to be followed up carefully despite absence of traditional risk factors for proteinuria.

Conclusion.

The overall outcome of this study indicated significant correlation between incidence of PE and presence of CRP suggesting that CRP can be-used as predictive marker for pre-eclampsia.

Results suggested significant effect of the gestational age on development of pre-eclampsia, as most of pregnant women developed PE towards their last trimester with no significant variation in the distribution of CRP levels in the three trimesters.

The study also indicated significant association between presence of CRP and levels of proteinuria.

Recommendation.

The study recommends the use of CRP levels as a predictive marker for detection of PE Necessary precaution can then be taken to avoid or at least minimize the consequent complications.

Acknowledgment.

We would like to express our gratitude to all participants involved in the study.

Funding.

This study has not received any external funding.

Conflict of interest.

The authors declare that there is no conflict of interest.

REFERENCES

1. Erez O, Romero R, Jung E, et al. Preeclampsia and eclampsia: the conceptual evolution of a syndrome. American Journal of Obstetrics and Gynecology. 2022;226:S786-S803.
2. Phipps E.A, Thadhani R, Benzing T, et al. Pre-eclampsia: pathogenesis, novel diagnostics, and therapies. Nature Reviews Nephrology. 2019;15:275-289.
3. Viana-Mattioli S, Fonseca-Alaniz M.H, Pinheiro-de-Sousa I, et al. Plasma from hypertensive pregnancy patients induce endothelial dysfunction even under atheroprotective shear stress. Scientific Reports. 2025;15:4675.
4. James DK, Steer PJ, Weiner CP, et al. High Risk Pregnancy Management Options. 3rd ed. Philadelphia WB Saunders; 2005.
5. Garcia RG, Celedon J, Sierra-Laguado J, et al. Raised C-reactive protein, and impaired flow-mediated vasodilation precede the development of preeclampsia. American Journal of Hypertension. 2007;20:98-103.
6. Fox R, Kitt J, Leeson P, et al. Preeclampsia: risk factors, diagnosis, management, and the cardiovascular impact on the offspring. Journal of clinical medicine. 2019;8:1625.
7. Thompson D, Pepys M.B, Wood S.P. The physiological structure of human C-reactive protein and its complex with phosphocholine. Structure. 1999;7:169-177.
8. Romero R, Garite TJ. Unexpected results of an important trial of vitamins C and E administration to prevent preeclampsia. American Journal of Obstetrics & Gynecology. 2006;194:1213-1214.

9. Hadi A. What are the Possible Causes and Effective Therapeutic Approaches of Preeclampsia?. The Science Journal of the Lander College of Arts and Sciences. 2021;14:52-56.
10. Cebesoy FB, Balat O, Dikensoy E, et al. CA-125, and CRP are elevated in preeclampsia. Hypertension in pregnancy. 2009;28:201-211.
11. Hamadeh R, Mohsen A, Kobeissy F, et al. C-reactive protein for prediction or early detection of pre-eclampsia: a systematic review. Gynecologic and obstetric investigation. 2021;86:13-26.
12. Iseki K, Iseki C, Kinjo K. C-reactive protein is a predictor for developing proteinuria in a screened cohort. Nephron Clin Pract. 2011;117.