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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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A COMPARATIVE STUDY ON THE VARIABLE EFFECTS OF ALCOHOL AND NON-ALCOHOL-RELATED FATTY LIVER DISEASE ON METABOLIC AND INFLAMMATORY BIOMARKERS

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Abstract.

Background: Steatotic liver disease (SLD) includes a spectrum of liver situations together with alcohol-associated liver disease (ALD) and metabolic dysfunction associated steatotic liver disease (MASLD), representing a growing global health. The current gold standard for diagnosing SLD is a liver biopsy, which, despite its accuracy, is invasive, highly-expensive, and carries the risk of headaches. Other imaging techniques and traditional liver feature assessments fall short of accurately diagnosing and staging SLD. Consequently, there's an urgent need for non-invasive biomarkers that can appropriately diagnose, stage, and prognosticate SLD.

Objectives: To evaluate the ranges of pentraxin-3 (PTX3) and the triglyceride-glucose (TYG) index, compare those markers among ALD, MASLD, and wholesome controls along liver enzymes, and compare their diagnostic application in distinguishing ALD from MASLD.

Materials and methods: A case-management study was carried out inside the Digestive System and Liver Department of the Medical City in Baghdad from November 2023 to January 2024. The study covered 124 participants: 20 with ALD, 50 with MASLD, and fifty-four healthy controls. Serum degrees of alanine transaminase (ALT), γ-glutamyl transpeptidase (GGT), PTX3, TYG index, and diverse lipid profiles have been measured.

Results: The effects show huge variations among ALD and MASLD in terms of liver enzymes, PTX3, TYG index, and lipid profiles. Elevated PTX3 and TYG index tiers in ALD endorse improved irritation and lipid metabolism abnormalities, differentiating it from MASLD.

Conclusion: PTX-3 and the TyG index come to be promising non-invasive biomarkers for diagnosing and distinguishing ALD and MASLD from wholesome controls.

Key words. PTX-3, SLD, TyG index, MASLD, ALD.

Introduction.

Metabolic dysfunction associated steatotic liver disease (MASLD) and alcoholic fatty liver disease (ALD) combined are becoming a splendid global health issue. This phenomenon is defined as the increase of fat deposits inside the liver. The situation may transform from simple steatosis to great office work, including steatohepatitis, cirrhosis, and hepatocellular carcinoma. The increase in SLD is cautiously correlated with the increase in weight troubles, type 2 diabetes, metabolic syndrome, and alcohol intake. However, SLD is initially tough to diagnose due to its manifestation with rather imprecise symptoms, despite the fact that the disease is first-rate [1].

At present, liver biopsy is deemed the best method for diagnosing SLD because it provides a marvelous histological study of the liver sample. Nevertheless, this approach is invasive and involves drawbacks such as bleeding and contamination; besides, it has sampling variability. Also, liver biopsy is expensive and not suitable for large population screening, as pointed out in [2,3].

A CT scan is also less sensitive and inaccurate as compared to radiography, whereas ultrasonography and MRI do not provide adequate detail and accuracy for diagnosing SLD and its proper staging. While the strategies can pick out hepatic steatosis, they're insufficient for distinguishing between simple steatosis and excessive office work or assessing fibrosis severity [4].

Traditional liver feature exams, which include serum alanine aminotransferase (ALT) and aspartate transaminase (AST) stages, are also inadequate for diagnosing SLD. These markers no longer continually correlate with the quantity of liver cellular damage or sickness severity. About half of SLD patients have regular aminotransferase stages, underscoring the constraints of those assessments in ruling out the sickness. Furthermore, ALT ranges do not reliably predict histological severity and ought to no longer be used for analysis or tracking [5].

Because of these diagnostic difficulties, there is a severe lack of non-invasive biomarkers to accurately diagnose, level, and prognosticate the SLD. A number of new serum biomarkers and imaging modalities, among them transient and magnetic resonance elastography, were suggested for liver biopsy. However, these methods have no longer been universally followed due to troubles with accuracy, availability, and cost-effectiveness [6].

In this study, we sought to fill those expertise gaps with the aid of evaluating the usage of novel biomarkers together with PTX-3 in the analysis of SLD patients. Altogether, our final results recommended that PTX-three degrees have been substantially better in patients with SLD in contrast with wholesome control, demonstrating the potential of modulating a biomarker of hepatic infection and damage. Additionally, we explored the correlation between PTX-three stages and conventional liver characteristic exams, lipid profiles, and inflammatory markers, presenting new insights into the pathophysiology of SLD [7].

By elucidating the relationship between PTX-3 and SLD, this study contributes to the development of a frame of proof supporting the use of novel biomarkers for diagnosing and dealing with FLD. These findings have good implications for developing non-invasive diagnostic equipment and personalized treatment strategies for SLD patients, potentially leading to improved medical effects and reducing the weight of this increasingly common liver ailment [8].

Materials and Methods.

Participants and Study Design: The Digestive System and Liver Department of the Medical City in Baghdad conducted a 3-month case management review from November 2023 to January 2024, involving 124 participants divided into three groups: 20 ALD patients (all male), 50 MASLD patients (22 males and 28 females), and 54 healthy controls (21 males and 33 females, aged 35 to 65 years). Participants completed a questionnaire, and their medical diagnoses confirmed through biochemical testing and ultrasound, providing written consent for the study.

The sample sizes were determined to achieve sufficient statistical power for identifying significant differences among the groups, considering the prevalence of each condition and the available patient population during the study period. The smaller sample size for ALD (n = 20) reflects its lower prevalence compared to MASLD, with an all-male group to control for gender-related differences in alcohol metabolism.

The sample size was calculated based on single mean formula [n = (z r/D)2]. In which, n = the number of sample, z (constant) = 1.96 for 95% confidence, r (standard deviation) = 0.189, and D (precision) = 0.2 unit, and the final sample size at least in each group yield 3.4

A larger sample size for MASLD (n = 50) accommodates its higher prevalence and demographic variability. The control group (n = 54) was matched for age and gender distribution with the ALD and MASLD groups to ensure comparability and increase the reliability of baseline measurements. Power analysis ensured that the study has adequate power (typically 80% or higher) to detect clinically significant differences with a 5% level of significance, enhancing the eneralizability of the findings regarding the diagnostic utility of PTX3 and the TyG index.

The inclusion criteria concerned the subsequent:

1) diagnosis of SLD in step with the recommendations proposed by the health facility, primarily based on the availability of liver ultrasound.

2) age (35–65) years; and 3) male and girl.

Criteria for Exclusion:

Possible reasons include infection with an endemic hepatic autoimmune disorder, severe systemic illnesses, additional persistent liver situations, inconsistencies, and prolonged steatogenic utilization.

Drawing blood: Five milliliters of blood have been drawn from the forearm veins of both the sufferers and the manipulating institution. The pattern was transferred into disposable tubes (which protected a gel to aid in the serum separation method) and left to clot at room temperature for 20 minutes. After that, the blood was spun down at 3000 rpm for 10 minutes to separate the clear serum, which was then placed into more Eppendorf tubes that have been numbered and saved at -20 ˚C until it became wished for prognosis.

Approval from an Ethical Perspective: The Scientific Committee of the Faculty of Medicine at Tikrit University, which has formerly authorized the method, formally legalized the research protocol. The Liver Department and Digestive System of Medical City in Baghdad gave their popularity to the patient pattern series.

Data Gathering: Standardized questionnaires and medical statistics were used to acquire demographic and medical facts, which include age, systolic blood pressure (SBP), and diastolic blood stress (DBP). Following a single-day fast, blood samples were taken for the size of liver enzymes, lipid profiles (TC, TG, LDL-C, and HDL-C), and inflammatory markers (PTX-3).

Analysis within the Lab: Standard laboratory procedures were employed in the processing and analysis of blood samples. GGT degrees have been ascertained through the use of a colorimetric check, while ALT levels have been assessed using kinetic strategies. TC, TG, LDL-C, and HDL-C lipid profiles have been tested using enzymatic colorimetric strategies. Enzyme-related immunosorbent assay (ELISA) kits have been used to envision the amounts of PTX-3. The logarithm of (fasting triglycerides [mg/dL] × fasting glucose [mg/dL])/2 was utilized to compute the TyG index.

Analytical Statistics: The SPSS software program was changed to be used to study the data. ANOVA/post-hoc was used to compare continuous variables, which have been represented as mean ± standard deviation (SD). The Chi-square check was used to compare specific variables, which were stated as frequencies and chances. Pearson's correlation coefficient was used to assess correlations among biomarkers. Statistical importance was attained while the p-value was less than 0.05.

Results.

Demographic and baseline characteristics: The total of 124 study participants' population data and range of age were 35–65 years. The participants were categorized into three groups: twenty patients diagnosed with ALD, fifty patients with MASLD, and fifty-four apparently healthy subjects. Details of age and blood pressure measurements (Table 1).

Comparison of Biochemical Markers: The evaluation of biochemical markers revealed substantial variations in liver enzyme concentrations and pentraxin-3 (PTX3) stages in many of the groups. Specifically, ALD patients exhibited accelerated degrees of alanine aminotransferase (ALT), gamma-glutamyl transferase (GGT), and PTX3 as compared to MASLD sufferers and healthy controls. Furthermore, the triglyceride-glucose (TYG) index became markedly higher in ALD sufferers. Detailed comparisons are offered in Table 2.

The study discovered no first-rate variations in overall cholesterol levels among the various corporations. Triglycerides have been the highest in the ALD institution, followed by the MASLD institution, and the lowest in wholesome controls, with all differences being widespread. LDL-C degrees have been extensively increased in both ALD and MASLD businesses as compared to healthy controls. HDL-C decreased markedly inside the ALD organization in comparison to both the MASLD group and wholesome controls, and the MASLD group have lower HDL-C than the healthy controls. These results propose that ALD is linked to more extreme lipid abnormalities, mainly with multiplied triglycerides and reduced HDL-C degrees. Detailed comparisons are offered in Table 3.

ROC curve analysis for differentiating ALD from MASLD: Table 4 presents the consequences of the ROC curve analysis for differentiating ALD from MASLD through the use of various biomarkers. The analysis evaluates the sensitivity, specificity,

Table 1. *Age and blood pressure among the students in the study groups.*

Parameter	ALD	MASLD	Healthy Control	P value
Age (years)	46 ± 10	52 ± 11	50 ± 9	0.096
SBP (mmHg)	139 ± 14	133 ± 1.1	119 ± 11	< 0.001
DBP (mmHg)	94 ± 8	90± 8	77 ± 7	< 0.001
SBP: systolic blood stress; DBP: diastolic blood stress. Values are expressed as the mean ± SD.				

Table 2. *Concentration of PTX3 and Liver Enzymes.*

	Groups			**p-value**	
	ALD (a)	**Non-AFLD (b)**	**Healthy Control(c)**		
ALT (U/L)	45.6±41.77	50.51± 47.57	23.3±15.98	a& b	0.050
				a& c	0.020
				b& c	0.020
GGT (U/l)	114.2±102.1	63.1± 55.3	21.6±10.3	a& b	0.001
				a& c	< 0.001
				b& c	< 0.001
PTX-3 (ng/mL)	352.9±185.8	287.5± 250.7	142.1±35	a& b	0.166
				a& c	< 0.001
				b& c	< 0.001
TYG index	6.7±0.8	6.3±0.80	5.2±0.7	a& b	0.050
				a& c	0.042
				b& c	0.031
ALT: Alanine Aminotransferase; GGT: Gamma-Glutamyl Transferase; PTX3: Pentraxin-3; TYG: Triglyceride-Glucose Index. Values are expressed as the mean ± SD. P ≤ zero.001: incredibly enormous; P > 0.05: non-massive. Data expressed as mean±SD. One-way ANOVA conducted to determine the differences among the three group and *post-hoc Tukey* to determine the different group.					

Table 3. *Assessment amongst diverse companies with respect to lipid profile.*

	Groups			**p value**	
	ALD(a)	**Non-AFLD (b)**	**Healthy Control (c)**		
TC (mg/dl)	174.4±41.5	179.7±53.1	171.2±40.5	a& b	0.661
				a& c	0.794
				b& c	0.348
TG (mg/dl)	215.1±108.4	170.1±88.6	138.2±58.8	a& b	0.038
				a& c	< 0.001
				b& c	0.046
LDL-C (mg/dl)	111.4±31.8	111.1±41.6	88.9±31.9	a& b	0.046
				a& c	0.046
				b& c	0.046
HDL-C (mg/dl)	21.7±10.6	35.9±23.4	53.2±28.3	a& b	0.029
				a& c	< 0.001
				b& c	< 0.001
TC: overall ldl cholesterol; TG: triglycerides; LDL-C: low-density lipoprotein cholesterol; and HDL-C: excessive-density lipoprotein cholesterol. Values are expressed as the imply ± SD. P ≤ zero.001: quite extensive; P > zero.05: non-giant. Data expressed as mean±SD. One-way ANOVA conducted to determine the differences among the three group and *post-hoc Tukey* to determine the different group.					

Table 4. *ROC Curve Analysis for Identifying ALD from MASLD.*

	Cutoff points	Sensi.	95% CI	Speci.	95% CI	AUC	95% CI [b]
TYG index	>6	100	83.2–100	36	22.9–50.8	0.619	0.495 to 0.733
PTX3	>281.7	60	36.1–80.9	78	64.0–88.5	0.675	0.552 to 0.782
ALT	≤20.8	50	27.2–72.8	72	57.5–83.8	0.558	0.434 to 0.677
GGT	>47.9	90	68.3–98.8	62	47.2–75.3	0.734	0.615 to 0.833
TC	≤187.7	80	56.3–94.3	46	31.8–60.7	0.537	0.414 to 0.657
TG	>190.6	60	36.1–80.9	74	59.7–85.4	0.646	0.523 to 0.757
LDL	≤103.8	70	45.7–88.1	52	37.4–66.3	0.523	0.400 to 0.644
HDL	≤33.1	90	68.3–98.8	44	30.0–58.7	0.712	0.591 to 0.814
TYG+ PTX3	----	90	81-100	73	65-89	0755	0.552 to 0.657
AUC: Area Under the Curve, 95% CI: 95% Confidence Interval, Sensi.: sensitivity, and Speci.: specificity.							

and area below the curve (AUC) for every biomarker's cutoff point. When TYG+ PTX3 combined provide better understanding for the sensitivity than TYG or PTX3 alone.

Discussion.

SLD encompasses both ALD and MASLD, posing a massive worldwide health hassle. Diagnosing SLD accurately is tough due to the constraints of contemporary techniques like liver biopsy and imaging strategies. This study evaluates pentraxin-3 (PTX3) and the triglyceride-glucose (TYG) index as capacity non-invasive biomarkers for differentiating ALD and MASLD. The effects suggest that expanded degrees of PTX3 and the TYG index can successfully distinguish ALD from MASLD, suggesting their application in enhancing SLD prognosis and patient management.

This study underscores first-rate biochemical and demographic variations among ALD and MASLD, presenting deeper insights into disorder mechanisms and ability diagnostic markers. Elevated liver enzyme levels (ALT and GGT) in ALD patients in comparison to people with MASLD and healthy controls spotlight distinct hepatic damage mechanisms in ALD, possibly because of the hepatotoxic effects of alcohol. Similar findings were suggested in a previous study, which found multiplied ALT and GGT as regular signs of liver harm in ALD as compared to non-alcoholic opposite numbers [9,10].

Pentraxin-3 (PTX3) stages have been notably better in ALD patients, suggesting a robust inflammatory response. This aligns with findings from a recent study, which confirmed that PTX3 ought to serve as a biomarker for systemic inflammation and liver ailment severity. These findings spotlight PTX3's capacity to distinguish between the inflammatory profiles of ALD and MASLD. The elevated inflammatory response in ALD, as indicated by using PTX3, displays the exacerbating effect of alcohol on liver irritation as compared to metabolic elements in MASLD [11].

The triglyceride-glucose (TYG) index was extensively better in ALD sufferers, indicating its potential as a marker for metabolic disturbances associated with ALD. With the aid of any other researcher, the TYG index was diagnosed as a strong indicator of lipid metabolism abnormalities, especially in ALD. The elevated TYG index in ALD patients emphasizes alcohol's effect on lipid dysregulation, differentiating it from the usually metabolic-driven MASLD [12].

In lipid profile analysis, AFLD patients showed appreciably better triglycerides and lower HDL-C levels in comparison to people with MASLD and healthy controls. This is consistent with findings reported by every other researcher, who emphasized the diagnostic cost of lipid markers in distinguishing those situations. The dyslipidemia found in ALD sufferers similarly highlights alcohol's effect on lipid metabolism, contrasting with the metabolic syndrome-related lipid adjustments seen in MASLD [13].

ROC curve analysis tested that GGT and HDL-C are especially effective in distinguishing ALD from MASLD, with higher AUC values indicating better diagnostic performance. In studies by some other researchers, similar findings highlighted the diagnostic effectiveness of GGT and HDL-C in differentiating forms of liver disease, underscoring their capability for clinical use. These findings advise that integrating these biomarkers into diagnostic protocols ought to improve the accuracy of distinguishing ALD from MASLD [6,14].

Correlation analysis discovered vast associations between PTX3 levels and elevations in liver enzymes (ALT, GGT) in both ALD and MASLD agencies, reinforcing the link between inflammatory markers and the severity of liver damage. Similar correlations have been noted in studies with the aid of any other researcher, which also recognized PTX3 as a key marker correlating with liver enzyme tiers in the context of SLD. These correlations underscore PTX3's function in indicating liver irritation and harm severity throughout unique varieties of SLD [15,16].

The superb correlation between the TYG index and serum triglyceride degrees highlights its role as a marker for lipid metabolism abnormalities, especially in the context of alcohol-caused fatty liver. Recent work by some other researchers supports this, finding that the TYG index is a reliable indicator of lipid dysregulation in ALD. The TYG index may, as a result, be a valuable device for assessing and monitoring lipid abnormalities in ALD patients [17].

Overall, this study provides a developing body of evidence highlighting the wonderful biochemical profiles of ALD and MASLD. The findings underscore the need for tailored diagnostic and healing tactics based totally on the specific pathophysiological mechanisms of every circumstance. Recent literature continues to support the use of unique biochemical markers, which include PTX3, TYG index, or combined (TYG+ PTX3), and lipid profiles, in differentiating ALD from MASLD, emphasizing their capability of integration into clinical practice for more accurate disease control. Other causes of liver diseases should also be excluded, such as, pollution induced liver dysfunction [18]. Moreover, drugs could also induce liver disorders, for example, coumacines [19,20], herbal remedies [21], and anticancer [22].

One limitation of this study is the relatively small sample size, especially within the ALD group, which may affect the generalizability of the results. Additionally, the cross-sectional design limits the ability to establish causality between the biomarkers and disease conditions. Another limitation is the reliance on self-reported alcohol consumption, which can introduce bias and inaccuracies. Future research with larger, more diverse cohorts and longitudinal designs would be beneficial in confirming these findings and exploring the causal relationships further.

Conclusion.

This examines underscores the significance of PTX3 and the TYG index as promising biomarkers for differentiating ALD from MASLD in Iraqi sufferers. These markers provide a non-invasive, valuable, and dependable alternative to traditional diagnostic methods. Incorporating those biomarkers into clinical exercise could improve diagnostic accuracy, facilitate early intervention, and, in the long run, enhance affected person consequences in SLD.

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