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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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THE ROLE OF MELATONIN AND VITAMIN D IN IRAQI PREMENOPAUSAL WOMEN OSTEOARTHRITIS PATIENTS

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Abstract.

Osteoarthritis (OA) is the most common form of arthritis, affecting 1 in 3 people over age 40 and women more so than men. The prevalence of OA is rising due to the increasing prevalence of OA risk factors, including obesity, physical inactivity, and joint injury. The aim of the study is to determine the correlation of Melatonin, Vitamin D (VitD) with osteoarthritis (OA) in women premenopausal OA women in age between 40-50 years old. The study included 60 patients with OA and 30 patients without OA from the general Balad Hospital in Salah Al-Den governorates. All subjects were premenopausal women between 40-50 years old. OA was diagnosed according to the clinical examination, X-ray diagnosis by Bone mineral density testing using STRATOS device, and biochemical tests using ELISA and COBOS 6000. This study proved that Melatonin is correlated with osteoarthritis in premenopausal women, there is a significant decrease ($P \leq 0.01$) in Melatonin (1.308+0.20 pg/dl), Vitamin D (22.82+ 1.53) mg/ml. Melatonin was positively correlated with vitamin D with no correlation with other biomarkers. Osteoarthritis in premenopausal women is strongly affected by Melatonin levels and Vitamin D, and it's recommended to use Melatonin and other chemical parameters as markers and potential therapeutic drugs.

Key words. Melatonin, vitamin D, premenopausal women, osteoarithritis.

Introduction.

Osteoarthritis (OA) indicates the most prevalent joint pathology. The aforementioned is a persistent incapacitating condition of the joints that primarily affects the elderly population. It is closely linked to inflammation, varying levels of bone pathology, and the erosion of articular cartilage. Furthermore, it is common to observe pathological and physiological alterations in the adjacent muscles and soft tissues surrounding one or more frequently impacted articulations that are capable of free movements, such as the knee joint [1-3].

The prevalence of osteoarthritis and their symptoms is observed to be 10% in males and 13% in females aged 60 years or above. The prevalence of symptomatic osteoarthritis (OA) is anticipated to rise as a result of the increasing obesity epidemic and the advancing age of people worldwide. The development of osteoarthritis is influenced by various factors, both systemic and local, indicating a complex etiology. The development of joint osteoarthritis is influenced by various factors such as advanced age, female sex, excessive body weight, knee injury, repetitive joint usage, bone density, muscle weakness, and joint laxity, particularly in the weight-bearing joints [4]. Therefore, looking around for novel factors might support the diagnosis of osteoarthritis and the severity of the disease [5,6].

The molecule melatonin, which has a simple structure denoted as N-Acetyl-5-methoxytryptamine, is ubiquitous across various forms of life [5]. Melatonin is produced by pinacocytes located in the pineal gland. Additionally, some tissues have the capacity to synthesize a limited quantity of melatonin [6]. There exists a correlation between the production of melatonin and the alternating light and dark cycle. The endogenous hormone melatonin is produced and released in conditions of low light exposure. The stimulation of retinal photoreceptive ganglion cells by light, particularly in the blue spectrum, results in a decrease in the secretion of melatonin. This phenomenon is no longer considered to be a secret Reiter [7,8].

In a general manner, levels of melatonin begin to increase early in the evening and peak at 12 a.m., followed by a progressive decrease thereafter [9]. The production of melatonin exhibits a gradual decline with increasing age. According to research, there is a gradual decline in melatonin levels that begins around the age range of 40 to 45 years [7]. Currently, melatonin is regarded as a potent cytoprotective agent, rather than a hormone in the traditional sense [10]. It possesses remarkable lipophilic characteristics, enabling it to readily permeate the cell membrane and subcellular organelles [11,12]. The process under consideration is capable of regulating the circadian clock in peripheral tissues, ensuring the synchronization of bone metabolism with light/dark (L/D) cycles, and engaging in various crucial physiological functions, including but not limited to anti-inflammatory, antitumor, and antioxidation processes. Additionally, it plays a role in regulating circadian and endocrine rhythms, immunity, and facilitating wound healing and tissue regeneration [8,13].

Melatonin exerts various effects that contribute positively to bone-related diseases. While various physical and drug therapies are present for bone-related diseases, one particular treatment stands out due to its cost-effectiveness, broad safety profile, extensive tissue reach, and minimal adverse effects. These attributes position it as a promising primary or adjunctive therapeutic approach for an extensive variety of bone disorders [14]. In addition to melatonin's role in the diagnosis of osteoarthritis patients, other biochemical parameters such as vitamin D are effective in the examination process of osteoarthritis. The aim of the study is to identify the relationship between melatonin and the impact of some factors as a cause of Osteoarthritis.

Materials and methods.

Collection and diagnosis of samples: Case-controlled study included sixty female osteoarthritis patients who were 40-50 years old, the samples were collected at specific time (10 P.M to 1 A.M) from November 2022 to the end of February 2023 from Balad Hospital and Medical city. The patients were admitted to the osteomyologist at Balad and Baghdad City. The female osteoarthritis patients diagnosed with osteoarthritis by physicians in the early stages of infection in females 40-50 years old and before premenopausal features were included in the study. The cases diagnosed using: Clinical and/ or biochemical tests.

X-Ray test: Bone density test Bone mineral density (BMD) testing using STRATOS device to determine bone density to measure bone mineral content and density using X-rays. Reading depended on identifying early OA cases according to the T-test level.

Determination of Melatonin using ELISA Kit: The level of Melatonin in the sample is measured using a competitive method with this kit. Standard and samples were added to wells that had already been coated with objective antibody. Streptavidin HR was then added to form an immune complex. After incubation, washing, and removing an unbound enzyme, substrates A and B were added to the solution, which caused the solution to turn blue and then yellow because of the acid effect. The amount of light or color had a bad effect on the level of melatonin in the body.

Vitamin D3 kit components: Külpmann et al. [15] reported that the Competition principle includes 3 incubation steps as per manufacturer instructions.

Statistical Analysis: The SAS System program was used to affect different factors in study parameters. T-Test was used to significantly compare between means (0.05 and 0.01 probability). The correlation coefficient, ROC, AUC, sensitivity, and specificity were determined using SPSS_21 program.

Results and Discussion.

Sample collection: Patients in the two groups were similar in age, and sex. The samples that were collected from Salah Al-den governorate/General Balad hospital which includes 60 premenopausal women OA patients in age between 40-50 years old and 30 healthy volunteers as control. Mean and standard deviation was estimated in addition to correlation coefficients.

Melatonin helps in the maintenance of bone and cartilage health.

The study showed there is a significant difference ($P \leq 0.01$) between premenopausal osteoarthritis female patients and the control group concerning melatonin level, and the mean of melatonin was (1.308±0.20 vs 5.394±1.85) pg/ml respectively with significant relation $P \leq 0.01$, as showed figure 1. The effect of OA on melatonin might be explained by Xie et al. [16]. Melatonin can be produced by chondrocytes as well as a variety of other tissues and organs. In response to circulating exogenous melatonin, cartilage cells synthesize melatonin and can upregulate melatonin receptor expression. Melatonin regulates cartilage formation and maturation via the melatonin receptors 1 (MTNR1A) and 2 (MTNR1B) [17], which are dysregulated following OA infection.

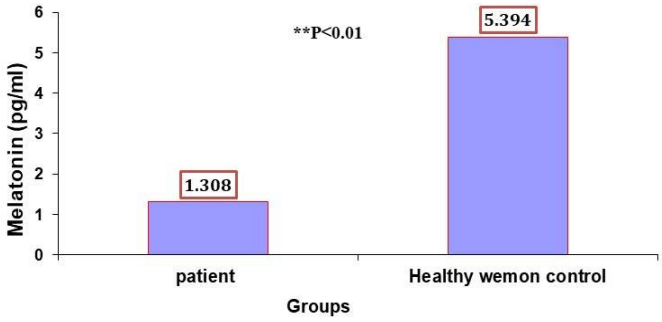

Figure 1. *The Comparison between premenopausal female patients and Healthy groups in Melatonin.*

These results were novel for premenopausal female OA cases therefore, there are some researchers to agree with or disagree with the resulting data, but Fu et al., [17] reported that The pineal gland is responsible for the secretion of the hormone melatonin, which is regulated by the circadian rhythm. Melatonin is released during the night and inhibited during the day. Studies suggest that melatonin levels tend to decline with advancing age [18]. Moreover, the significance of melatonin in the pathogenesis of osteoarthritis (OA) is apparent from research indicating the advantageous therapeutic outcomes of this hormone in mitigating OA-associated symptoms in different OA models. In the context of the rabbit model of osteoarthritis, it was observed that melatonin exhibited a beneficial impact on the inflammatory response and oxidative stress induced by H2O2. The positive effects of melatonin on OA have been attributed to its anti-inflammatory and antioxidative properties, as evidenced by research [19].

These results agree with Lu et al. [20], who suggest the increase of melatonin uptake has a potential role in the prevention and therapy of OA, as the main pathological characteristics of OA are reduced numbers of chondrocytes and consequent cartilage matrix degradation, as Melatonin displays diverse regulatory properties through its binding to specific receptors and downstream molecules. Additionally, it exerts various receptor-independent actions by targeting intracellular mechanisms, such as protecting chondrocytes, modulating inflammation, and scavenging free radicals. The hormone melatonin has been found to have a regulatory effect on the process of cartilage regeneration and degradation. This is achieved through the direct or indirect modulation of the expression of key circadian clock genes, including transcriptional activators that play a role in maintaining cartilage homeostasis [19].

On the other side, the effect of age on Melatonin levels in premenopausal females might be a crucial reason for the decreased level of melatonin in females, Wetterberg et al. [21] reported that Overnight urines from 321 normal subjects at 19 medical centers in 14 countries. Melatonin concentration had a negative correlation with age, weight, and height. The potent anti-inflammatory and antioxidant properties of melatonin have been found to mitigate the effects of aging. However, low levels of melatonin may be rational in patients with osteoarthritis and may be linked to the pathogenesis of this disease. Referring to the above results, its recommended to use Melatonin as a therapeutic drug for the treatment of female premenopausal OA patients over 40 years old.

In addition to serum levels of melatonin, the levels of bone turnover biomarkers such as calcium, vitamin D, and phosphate were measured in OA patients and controls. Results indicated in the table 1 showed that serum levels of vitamin D (Vit D) and Melatonin were significantly lower (P≤0.01) in premenopausal female OA patients than their levels in healthy control (22.82 ±1.53, vs 32.96 ±1.72 and 1.308 ±0.20 vs 5.394 ±1.85) ng/dl respectively.

Table 1. *Comparison between premenopausal female patients and Healthy groups in Melatonin and Vitamin D.*

	Melatonin (pg/ml)	**VitD (ng/dl)**
Female OA patients	1.308 ±0.20	22.82 ±1.53
Healthy Control	5.394 ±1.85	32.96 ±1.72
** (P≤0.01).		

These results agree with Oskoii et al. [22] which found decreased vitamin D The levels of OA patients were found to be significantly different from those of controls, with a statistical significance of P<0.05. Hence, it is likely that melatonin plays a role in decreasing DNA damage and exhibiting a prophylactic effect in osteoarthritis.

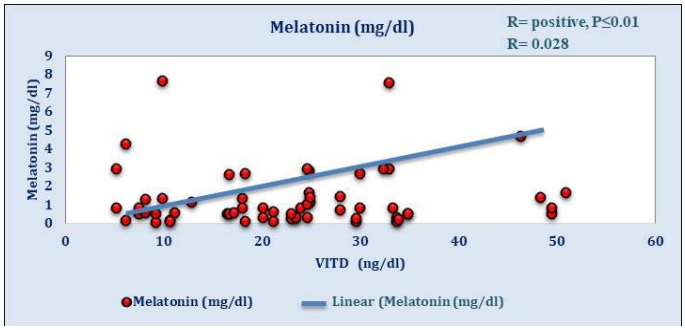

Figure 2*. Scatter plot to show the correlation between Melatonin and vitamin D in the patient group.*

Results shown in Figure 2 referred that there is a positive correlation coefficient between Melatonin and VitD biomarkers in female premenopausal OA patients. ROC for VITD (ng/dl) in the patient group was estimated, which showed that AUC = 0.60 at 95% CI specificity=0.73, sensitivity =0.76. Oskii et al. [22] agree with these results as it found a positive correlation between the levels of Vitamin D and melatonin in OA patients (r=0.453; P<0.05). These results might be explained by the effect of a decrease in bone turnover marker as vitamin D appears to be associated with an increased risk of progression of OA of the knee [23,24].

Conclusion.

There is a significant difference between premenopausal osteoarthritis female patients and the control group concerning melatonin levels. The Serum levels of vitamin D and Melatonin decreased significantly in premenopausal female OA patients than their levels in healthy control respectively.

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