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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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# ONYCHOLYSIS AS A COMPLICATION OF TAXANE-BASED CHEMOTHERAPY WITH CONCOMITANT CRYOTHERAPY IN BREAST CANCER PATIENTS: TWO CASE REPORTS

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## Abstract.

Nail changes are a common side effect of taxane chemotherapy, although onycholysis is quite a rare complication the correct management of which is poorly standardized.

These case reports provide a description and analysis of onycholysis, a rare but noteworthy complication observed during taxane-based chemotherapy with concomitant cryotherapy in two patients with breast cancer. Despite prophylactic measures, both cases experienced nail complications during Paclitaxel treatment, underlining the complex nature of onycholysis during taxane therapy and highlighting the critical role of nail assessment and infection screening.

**Key words.** Amoebic dysentery, *Entamoeba histolytica*, PCR, ELISA.

## Introduction.

Taxane-based chemotherapy represents a pivotal element in the arsenal against breast cancer, underpinned by an extensive body of evidence from diverse studies [1]. These agents, renowned for their efficacy, are not without their drawbacks, as they introduce a spectrum of side effects that add a significant burden to the already challenging journey of patients contending with cancer. The cumulative effect of these adverse reactions severely impairs the quality of life and emotional well-being of patients, casting a shadow over the therapeutic journey and necessitating a delicate balance between efficacy and tolerability [2].

Among the constellation of side effects, peripheral neuropathy stands out for its potential to disrupt treatment continuity due to its severity. Manifesting in various forms, notably pain, this condition poses a substantial hurdle in patient management [3]. The incidence of peripheral neuropathy varies with the type of taxane used: Paclitaxel is associated with neuropathy in 42-70% of cases, while Docetaxel's association ranges from 20-58% [4,5]. Another noteworthy adverse effect is nail toxicity, which, although relatively common, varies in prevalence between Paclitaxel and Docetaxel treatments, the latter showing a higher propensity (2.5% vs. 20-30% respectively) [6].

The rapidly dividing cells of the nail matrix are particularly vulnerable to the antimitotic effects of taxanes, leading to changes that, while mostly cosmetic, highlight the drugs' impact on rapidly proliferating cell. These changes typically regress post-therapy, but in certain instances, they culminate in onycholysis, a condition characterized by the detachment of the nail from the nail bed [7]. Onycholysis, although a less common manifestation of taxane toxicity, presents a clinical challenge due to the lack of standardized management protocols [8].

The advent of medical innovations has not fully illuminated the intricacies of onycholysis as a taxane-related complication, particularly when it occurs alongside cryotherapy—a prophylactic modality often employed to mitigate peripheral neuropathy [9]. The potential pathogenetic interplay between neuropathy and nail damage has been suggested, yet conclusive evidence remains elusive, underscoring the need for further investigation [10].

Given this backdrop, each new case of onycholysis in the context of taxane-based chemotherapy and cryotherapy becomes a critical point of interest, contributing to the collective understanding and management strategies for such complications. This report aims to enrich this discourse by presenting two distinct cases of onycholysis, unravelling the multifaceted nature of this condition and its implications for patient care in the realm of taxane-based chemotherapy.

## Case 1.

It pertains to a 31-year-old female patient diagnosed with triple-negative breast cancer (Stage III b).

The patient underwent neoadjuvant chemotherapy, a therapeutic strategy adopted to downsize tumours before definitive surgery. Her treatment regimen included doxorubicin and cyclophosphamide followed by paclitaxel. Significantly, concomitant cryotherapy was administered to mitigate the risk of taxane-induced peripheral neuropathy. Remarkably, peripheral neuropathy was comprehensively assessed using the adapted QLQ-EORTC-CIPN20 questionnaire, and no neuropathy was reported during the treatment course or upon treatment completion. It's worth noting that the patient regularly underwent shellac procedures for her nails, despite the fact that before starting treatment, this action was discouraged by the doctor, who recommended avoiding any nail procedure during chemotherapy.

During the course of paclitaxel treatment, after the second cycle, the patient encountered the unexpected loss of her left first toenail. This event appeared to be a rather peculiar occurrence, and upon evaluation, a concomitant onychomycosis (Candida Albicans) was noted on the affected nail, further complicating the clinical scenario. Additionally, the patient disclosed a personal practice of using shellac on her toenails.

The anti-yeast treatment by topical Naftifine Hydrochlyride 1% BID was administered, resulting in re-growth of normal nail.

## Case 2.

The second case involves a 34-year-old female diagnosed with hormone receptor-positive (ER-80%, PR-80%), HER2-negative

***Figure 1.*** *The toe condition after onycholysis: the re-growth of new nail has started.*

***Figure 2.*** *The already regrown nail after treatment with Naftifine Hydrochloride 1% topical application BID.*

breast cancer with a ki67 index of 30%. This case was diagnosed as cT2N1M0, reflecting Stage II b cancer.

The patient had already undergone a modified radical mastectomy and lymph node dissection. Her adjuvant chemotherapy regimen consisted of Epirubicin and Cyclophosphamide, followed by Paclitaxel.

In this instance, concurrent cryotherapy was administered during paclitaxel treatment. The adapted QLQ-EORTC-CIPN20 questionnaire was utilized for peripheral neuropathy assessment, and as in the previous case, no neuropathy was reported during or after treatment.

The patient's clinical course was diverged following the first dose of Paclitaxel. She experienced the loss of the fourth fingernail on her left hand, an event that drew clinical attention and prompted exploration. The onychomycosis (Candida Parapsilosis) was observed on the affected nail. The anti-yeast treatment by topical Naftifine Hydrochloride 1% BID was administered, resulting in re-growth of normal nail. It is worth noting that the patient removed shellac from her nails 2 days before taxane administration.

These two cases serve as poignant reminders of the multifaceted nature of onycholysis during taxane-based chemotherapy, where variables such as pre-existing nail health, concomitant infections, and even the use of cosmetic nail procedures may intertwine to influence outcomes [11].

## Discussion.

The presented cases describe onycholysis that developed during taxane chemotherapy and simultaneous cryotherapy. Three randomised control trials and six prospective studies with 708 patients indicate, that taxane-induced nail toxicity and skin toxicity were significantly lower in the cryotherapy patients than in the controls [12]. Although cryotherapy has traditionally prevented taxane-induced peripheral neuropathy, its effectiveness in preventing onycholysis remains uncertain [13].

Generally, nail toxicity develops mostly at the end of therapy, and total drug dosage is the only known factor that predisposes to these side effects. Trauma possibly plays a role as the most severe signs are located on the first toenails [14]. In both cases onycholysis developed after second and first cycles respectively, suggesting that the cumulative dose for nail toxicity was not reached. Some studies show that the use of frozen gloves demonstrates a benefit in reducing symptoms of neuropathy or nail toxicity and provides a new tool in supportive care management to improve patient's QoL [15].

The effectiveness of cryotherapy in mitigating taxane-induced peripheral neuropathy is well-documented, yet its role in preventing onycholysis remains less clear. However, recent findings suggest that mild cryotherapy could offer a promising avenue for managing taxane-induced nail toxicity. A Phase II single-arm study involving taxane-naïve breast cancer patients undergoing weekly adjuvant chemotherapy with paclitaxel explored the use of instant-ice packs on fingers and toes during treatment. This intervention demonstrated a significant reduction in grade 2 nail toxicities, indicating that mild cryotherapy is a feasible and well-tolerated prophylactic strategy with limited impact on routine clinical workload [16].

According to the alternative opinion, it is impossible to prevent taxane-induced nail side effects. However, a careful patient monitoring permits to immediately recognize and manage the symptoms in order to induce their remission and improvement of the patient's quality of life [17].

Our cases raise intriguing questions about the potential interaction between cosmetic nail treatments such as shellac and yeast infections, and chemotherapy agents such as taxanes.

The described occurrence of onycholysis in patients using such nail cosmetics requires further study. This observation indicates the importance of research to understand the interactions between nail cosmetics and taxane-based chemotherapy agents. It is confirmed that the less nail toxicity was observed in patients receiving specialist nail drops or standard care arms in comparison to those using nail polish. Such a conclusion provides evidence to support clinicians' suggestions on nail care recommendations based on the patients' needs and preferences [18].

Our two cases present distinct instances of onycholysis observed during the course of taxane-based chemotherapy for breast cancer. While the cases differ in patient demographics, cancer characteristics, and treatment regimens, they share a common thread of nail-related complications.

In both patients the cryotherapy was concurrently administered to mitigate the risk of taxane-induced peripheral neuropathy. Notably, both patients did not experience peripheral neuropathy. However, during paclitaxel treatment, they encountered the unexpected loss of nails (the first on the foot, the second on the hand). In both cases the concomitant onychomycosis was diagnosed. This infection generally results in nail damage and supports onycholysis development. The taxane-based chemotherapeutic agents may exacerbate nail damage initiated by yeast infection. The complementary to chemotherapy cryotherapy might provoke the additional impulses: the damaged toenail, when subjected to cryotherapy-induced vasoconstriction, could suffer from reduced blood flow, exacerbating the condition and leading to onycholysis.

Hypothetically, the use of shellac on the nails before taxane infusion may also pose a risk for the infection development and onycholysis, particularly when combined with cryotherapy. The observation suggests that while cryotherapy is valuable in preventing taxane-induced peripheral neuropathy and nail changes, it does not completely eliminate the risk of onycholysis [19]. However, in some cases when the yeast is existed, the cryotherapy might play the destructive role.

Therefore, the question of whether chemotherapy or cryotherapy stimulates onycholysis requires further clarification. But our cases show that whether the main culprit is chemotherapy, cryotherapy, or both, their harmful effects occur in the context of a fungal infection.

It reaffirms the need for comprehensive assessment of the patient, including the evaluation of nail conditions and screening for infections, both before and during chemotherapy. The recommended time interval between nail procedures and taxane infusion is currently unknown, and further trials are necessary to gain a better understanding.

## Conclusion.

In conclusion, these cases serve as vital additions to the existing body of knowledge, providing insights into the diverse and occasionally unexpected side effects accompanying taxane-based chemotherapy for the breast cancer.

The multifactorial nature of onycholysis during taxane treatment demands rigorous research endeavours to unravel its intricacies fully. Patient education, early identification of nail-related complications, and timely intervention, particularly in treating concomitant infections, are pivotal in enhancing the overall quality of care for breast cancer patients undergoing taxane-based chemotherapy. Ongoing research is essential, encouraging a deeper exploration of chemotherapy-related side effects, ultimately optimizing breast cancer treatment.

## REFERENCES


1. Qin Y, Li H, Guo J, et al. Adjuvant Chemotherapy, with or without Taxanes, in Early or Operable Breast Cancer: A Meta-Analysis of 19 Randomized Trials with 30698 Patients. PLOS ONE. 2011;6:e26946.

2. Lai JI, Chao TC, Liu CY, et al. A systemic review of taxanes and their side effects in metastatic breast cancer. Front Oncol. 2022;12:940239.

3. Okuyama H, Nakamura S, Akashi-Tanaka S, et al. QOL Evaluation of Nab-Paclitaxel and Docetaxel for Early Breast Cancer. Eur J Breast Health. 2018;14:194-198.

4. Simão D. A. da S, Murad M, Martins C, et al. Chemotherapy-induced peripheral neuropathy: review for clinical practice. Revista Dor. 2015;16:215-220.

5. https://www.uptodate.com/contents/paclitaxel-conventional-drug-informationsearch=incidence%20of%20chemotherapy%20induced%20peripheral%20neuropathy%5D&topicRef=2836&source=see_link# F205548

6. https://www.uptodate.com/contents/docetaxel-drug-%0Dinformation?search=docetaxel%20drug%20information&source=panel_search_result&selectedTitle=1~148&usage_type=panel

7. Kim JY, Ok ON, Seo JJ, et al. A prospective randomized controlled trial of hydrating nail solution for prevention or treatment of onycholysis in breast cancer patients who received neoadjuvant/adjuvant docetaxel chemotherapy. Breast Cancer Research and Treatment. 2017;164:617-25.

8. Saraswat N, Sood A, Verma R, et al. Nail Changes Induced by Chemotherapeutic Agents. Indian J Dermatol. 2020;65:193-198.

9. Bailey AG, Brown JN, Hammond JM. Cryotherapy for the prevention of chemotherapy-induced peripheral neuropathy: A systematic review. J Oncol Pharm Pract. 2021;27:156-164.

10. Alessandrini A, Starace M, Cerè G, et al. Management and Outcome of Taxane-Induced Nail Side Effects: Experience of 79 Patients from a Single Centre. Skin Appendage Disord. 2019;5:276-282.

11. Rieder EA, Tosti A. Cosmetically Induced Disorders of the Nail with Update on Contemporary Nail Manicures. J Clin Aesthet Dermatol. 2016;9:39-44.

12. Huang KL, Lin KY, Huang TW, et al. Prophylactic management for taxane-induced nail toxicity: A systematic review and meta-analysis. Eur J Cancer Care (Engl). 2019;28:e13118.

13. Jia J, Guo Y, Sundar R, et al. Cryotherapy for Prevention of Taxane-Induced Peripheral Neuropathy: A Meta-Analysis. Front Oncol. 2021;11:781812.

14. Alessandrini A, Starace M, Cerè G, et al. Management and Outcome of Taxane-Induced Nail Side Effects: Experience of 79 Patients from a Single Centre. Skin Appendage Disord. 2019;5:276-282.

15. F.R. Salgueiro, C. Costa, J.C. Monteiro, et al. 1719P Peripheral neuropathy and nail dystrophy induced by taxanes: The impact of cryotherapy on the prevention and control of symptoms, Annals of Oncology. 2021;32:S1193.

16. Mazzega-Fabbro C, Polesel J, Spazzapan S, et al. Mild Cryotherapy for Prevention of Paclitaxel-Induced Nail Toxicity in Breast Cancer Patients: A Phase II Single-Arm Clinical Trial. Clin Breast Cancer. 2023;23:447-453.

17. Alessandrini A, Starace M, Cerè G, et al. Management and Outcome of Taxane-Induced Nail Side Effects: Experience of 79 Patients from a Single Centre. Skin Appendage Disorders. 2019;5:276-282.

18. Morrison A, Marshall-McKenna R, McFadyen AK, et al. A randomised controlled trial of interventions for taxane-induced

nail toxicity in women with early breast cancer. Sci Rep. 2022;12:11575.
19. Peyton L, Fischer-Cartlidge E. Extremity Cooling: A Synthesis of Cryotherapy Interventions to Reduce Peripheral Neuropathy and Nail Changes From Taxane-Based Chemotherapy. Clin J Oncol Nurs. 2019;23:522-528.

**Онихолизис как осложнение химиотерапии на основе таксанов с сопутствующей криотерапией у больных раком молочной железы: описание двух случаев**

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**Аннотация**

Изменения ногтей являются частым побочным эффектом химиотерапии таксанами. Однако онихолизис - достаточно редкое осложнение, правильное лечение которого плохо стандартизировано.

В статье описаны и проанализированы два случая онихолизиса, наблюдавшиеся при проведении химиотерапии таксанами с сопутствующей криотерапией у больных раком молочной железы. Несмотря на профилактические меры, в обоих случаях возникли осложнения на ногтях, что подчеркивает комплексный характер онихолизиса на фоне терапии таксанами.

Подчеркивается важная роль оценки ногтей и скрининга инфекций.