DOI: https://doi.org/10.17816/dv632984

Original study article

Janus kinase inhibitor in combination therapy for atopic dermatitis

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ABSTRACT

BACKGROUND: Atopic dermatitis is a chronic recurrent immunoinflammatory skin disease that develops against the background of a genotypic defect in the skin barrier function and innate and adaptive autoimmunity. Currently, there is no specific therapy for atopic dermatitis, so there remains a need to constantly search for effective pathogenetic approaches to its treatment. Today, the Janus kinase type 1 inhibitor abrocitinib is recommended for the treatment of moderate to severe atopic dermatitis.

AIM: To conduct a comparative assessment of the effectiveness of the combination of UVB 311 nm with abrocitinib and UVB 311 nm phototherapy against the background of standard therapy according to indications in the treatment of patients with moderate and severe atopic dermatitis.

MATERIALS AND METHODS: During the period from 2023 to 2024, the dermatological status and quality of life were assessed in 40 patients with moderate to severe atopic dermatitis who were prone to frequent relapses. The patients were treated at the clinic for skin and venereal diseases. Depending on the therapy, all patients were divided into two groups. The first group consisted of 20 patients receiving systemic, topical therapy in combination with UVB 311 nm phototherapy and additionally abrocitinib, at an induction dose of 200 mg followed by a dose of 100 mg. The second group included 20 patients who received systemic, local therapy in combination with UVB 311 nm phototherapy. Upon admission to the hospital and after two months of therapy, a comparative assessment of the DLQI index and an assessment of the prevalence and intensity of skin lesions in accordance with the SCORAD and IGA index were performed, an assessment of the level of IgE in the blood were performed

RESULTS: After the course of therapy, the SCORAD index in patients of the first and second groups decreased statistically significantly (p=0.001) by 2.4 times and 1.6 times, respectively. The DLQI index in patients of the first and second groups after the course of therapy significantly (p=0.001) decreased by 3.2 times, 2.1 times, respectively.

CONCLUSION: Our study revealed a more significant effectiveness of therapy with abrocitinib in combination with UVB 311 nm compared with UVB 311 nm monotherapy in patients with moderate and severe atopic dermatitis.

Keywords: atopic dermatitis; abrocitinib; UVB 311 nm therapy.

To cite this article:
Olisova OYu, Kochergin NG, Abdulridha AH, Myzina KA. Janus kinase inhibitor in combination therapy for atopic dermatitis. *Russian journal of skin and venereal diseases.* 2024;27(5):516–525. DOI: https://doi.org/10.17816/dv632984

Submitted: 29.05.2024 **Accepted:** 15.09.2024 **Published online:** 25.10.2024

DOI: https://doi.org/10.17816/dv632984

Оригинальное исследование

Ингибитор янус-киназы в комбинированной терапии атопического дерматита

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АННОТАЦИЯ

Обоснование. Атопический дерматит — хроническое рецидивирующее иммуновоспалительное заболевание кожи, которое развивается на фоне генотипического дефекта барьерной функции кожи и врождённой и адаптивной аутоиммунности. В настоящее время отсутствует специфическая терапия атопического дерматита, поэтому сохраняется необходимость постоянного поиска эффективных патогенетических подходов к его лечению. На сегодняшний день для терапии атопического дерматита среднетяжёлой и тяжёлой степени рекомендован ингибитор янус-киназ 1-го типа аброцитиниб.

Цель исследования — сравнительная оценка эффективности комбинации УФБ-311 нм с аброцитинибом и фототерапии УФБ-311 нм на фоне стандартной терапии по показаниям в лечении пациентов с атопическим дерматитом среднего и тяжёлого течения.

Материалы и методы. За период с 2023 по 2024 год проведена оценка дерматологического статуса и оценка качества жизни 40 пациентов с атопическим дерматитом среднего и тяжёлого течения, склонным к частым рецидивам. Пациенты проходили лечение в Клинике кожных и венерических болезней имени В.А. Рахманова. В зависимости от проводимой терапии все пациенты были разделены на две группы. Первую группу составили 20 пациентов, получавшие фототерапию УФБ-311 нм и аброцитиниб в индукционной дозе 200 мг с последующей дозой 100 мг на фоне стандартной терапии по показаниям. Во вторую группу вошли 20 пациентов, получавшие фототерапию УФБ-311 нм на фоне стандартной терапии по показаниям. При поступлении в стационар и через 2 месяца терапии проводилась сравнительная оценка дерматологического индекса качества жизни (DLQI), оценка распространённости и интенсивности поражений кожи в соответствии с индексами SCORAD и IGA, оценка уровня IgE в крови.

Результаты. После курса терапии индекс SCORAD у пациентов групп 1 и 2 статистически значимо (p=0,001) снизился в 2,4 и 1,6 раза соответственно, индекс DLQI статистически значимо (p=0,001) уменьшился в 3,2 и 2,1 раза соответственно.

Заключение. В нашем исследовании выявлена более значимая эффективность терапии аброцитинибом в комбинации с УФБ-311 нм по сравнению с монотерапией УФБ-311 нм у пациентов с атопическим дерматитом среднего и тяжёлого течения.

Ключевые слова: атопический дерматит; аброцитиниб; терапия УФБ-311 нм.

Как цитировать:
Олисова О.Ю., Кочергин Н.Г., Абдулридха А.Х., Мызина К.А. Ингибитор янус-киназы в комбинированной терапии атопического дерматита // Российский журнал кожных и венерических болезней. 2024. Т. 27, № 5. С. 516–525. DOI: https://doi.org/10.17816/dv632984

Рукопись получена: 29.05.2024 **Рукопись одобрена:** 15.09.2024 **Опубликована online:** 25.10.2024

BACKGROUND

According to 2023 statistics, atopic dermatitis globally affects 37% of the North America population, 29% in European countries, 25% in Asia, about 3% in Africa and Midwest, and 6% in Latin America [1–3]. Today atopic dermatitis has been reported in 204.05 million of people worldwide. In gender ratio, the atopic dermatitis incidence rate is about 2.8% in women, and 2.4% in men. The incidence rate of atopic dermatitis is up to 20% and 2%–8% in the pediatric population and in the adult population, respectively. Atopic dermatitis accounts for 20% to 40% in all skin diseases [4, 5].

The incidence of atopic dermatitis in the Russian Federation comprises 188.2 cases per 100,000 of total population, the incidence among children is 777.4 cases per 100,000 of the population in the age of 0–14, and 374.1 in the age of 15–17 [6].

Atopic dermatitis is characterized by itching and eczematous rashes on the skin [7]. Diagnosis of atopic dermatitis is based on the distinctive clinical pattern and specific site of rash.

According to 2023 clinical guidelines, the principle of sequential therapy is used depending on the severity of atopic dermatitis [8, 9]. The necessity for a constant search for new effective therapies remains [10, 11], since the current pathogenetic therapy of atopic dermatitis is not always effective [9]. To date, drugs based on monoclonal antibodies [12, 13] and Janus kinase inhibitors [14, 15] are being actively introduced into therapeutic practice .

Abrocitinib is a selective oral inhibitor of Janus kinase type 1 that reduces the levels of interleukins 4 and 13 pathogenetically responsible for the development of atopic dermatitis [16]. Abrocitinib was approved for the therapy of moderate to severe atopic dermatitis by the Ministry of Health of the Russian Federation in August of 2022 [17–19].

UVB 311 nm therapy is an effective treatment method for moderate to severe atopic dermatitis which is characterized by high tolerability and minimal side effects [20, 21]; however, cases of severe, persistent and resistant to UVB 311 nm atopic dermatitis are noted.

The study aimed to conduct a comparative assessment of the effectiveness of the combination of UVB 311 nm with abrocitinib and UVB 311 nm phototherapy during standard therapy according to indications in the treatment of patients with moderate to severe atopic dermatitis.

MATERIALS AND METHODS

Study design

Comparative clinical prospective study.

Eligibility criteria

Inclusion criteria: confirmed diagnosis of atopic dermatitis; age over 18 years old; no pregnancy or lactation; no acute or chronic diseases in exacerbation; no infectious diseases; presence of signed informed consent for participation in the study and processing of personal data.

Exclusion criteria: noncompliance with the inclusion criteria; individual intolerance to the treatment methods; absence of signed informed voluntary consent for participation in the study and processing of personal data.

Study setting

The study was conducted on the basis of Clinic for Skin and Venereal Diseases named after V.A. Rakhmanov (University Clinical Hospital No. 2) of Sechenov University.

A comparative assessment of the atopic dermatitis severity in 40 patients who were treated at the Clinic for Skin and Venereal Diseases named after V.A. Rakhmanov was carried out from 2023 to 2024. The total duration of each observation comprised 2 months.

Intervention description

Assessment of the prevalence and intensity of skin lesions according to SCORAD (Scoring Atopic Dermatitis), IGA (Investigator Global Assessment), and DLQI (Dermatology Life Quality Index) scales was performed in 40 patients with moderate to severe atopic dermatitis prone to frequent relapses (up to 5–6 times a year) on admission to the hospital and after two months of therapy.

Depending on the therapy, all patients were divided into two groups. The first group consisted of 20 patients (average age was 40±13.7 years) receiving UVB 311 nm phototherapy with abrocitinib at a dose of 200 mg/day in the first month followed by a dose of 100 mg/day in the second month. The second group included 20 patients (average age was 39.6 ± 17.4 years) who received standard therapy as per indications in combination with UVB 311 nm phototherapy.

The narrow-band UVB 311 nm phototherapy was performed in Waldmann 7001 cabin (Germany) according to five times a week irradiation method with the initial dose of 0.1 J/cm^2 and subsequent increase every 2–4 sessions up to the maximum value of 1.5–3.7 J/cm^2. The general course of UVB 311 nm phototherapy consisted of 19–26 irradiation sessions with a total cumulative dose of 35.3±5.9 J/cm^2.

Ethical review

The study was approved by the local ethics committee of the Federal State Autonomous Educational Institution of Higher Education "I.M. Sechenov First Moscow State Medical University" (Sechenov University); extract from protocol No. 0623 dated April 06, 2023.

Statistical analysis

Statistical analysis of data was performed using the Statistica v. 7.0 data analysis software. Data collection and systematization were performed in Microsoft Excel 2016. The correlation was considered statistically significant at $p \leqslant 0.05$.

RESULTS

Participant characteristics

Atopic dermatitis of erythematous-squamous and lichenoid forms in the acute stage was verified in all study participants (n=40) during the evaluation of dermatologic status at the hospital. Moderate and severe disease was recorded in 26 (65%) and 14 (35%) patients, respectively. On admission to the hospital in the group of patients, the mean SCORAD index was 56.9±5.8, the mean DLQI was 19.7±1.8, the mean IGA was 2.7±0.3, and the mean immunoglobulin E (IgE) level was 268.6±4.7 U/mL.

Primary findings

Before treatment, SCORAD index of groups 1 and 2 was 62.1±3.1 and 51.8±6.5, respectively. After two months of therapy the SCORAD decreased (p=0.001) to 25.0±1.8 in group 1, and to 25.0±1.8 in group 2 accordingly, which was statistically significant between the groups (p=0.002).

IGA scores before treatment were 2.8±0.4 and 2.7±0.5, respectively. After two months of therapy, the score in group 1 decreased to 0.9±0.3 (p=0.003), the decrease in group 2 was insignificant (p=0.121).

On admission to the hospital, the DLQI in groups 1 and 2 was 19.3±1.6 and 18.7±2.9, respectively. After two months of therapy, the index decreased significantly to 6.8± 1.5 and 8.0±0.8 (p=0.002), meanwhile the intergroup difference was not statistically significant (Fig. 1).

The cases in groups 1 and 2 are presented as an example.

Blood IgE level in group 1 was 272.6±5.4 U/mL before treatment, and 118.2±4.3 U/mL (p=0.0012) after the therapy. In group 2 the value was 259.4±6.8 U/mL before treatment, and decreased to 208.2±5.9 (p=0.213) after the therapy.

Case 1 (group 1: UVB 311 nm with abrocitinib therapy). Patient N., male, born in 1983. Hospitalized in Clinic for Skin and Venereal Diseases named after V.A. Rakhmanov on January 22, 2024, with complaints of skin rashes on head, trunk, upper and lower extremities, accompanied by severe itching.

Medical history. Has been considering himself ill since childhood. The disease has proceeded with periods of remissions and exacerbations. The patient used Sinaflan ointment until the age of 29 years and noted the worsening of the skin condition since 2019. From 2019 to 2024, different therapy methods were used according to the clinical guidelines; however, complete remission was not achieved. Therefore, he applied to Clinic for Skin and Venereal Diseases named after V.A. Rakhmanov for comprehensive treatment in hospital.

Status localis. Rash of chronic inflammatory nature. Rash was localized on the head, trunk, upper and lower extremities. Rash elements were represented by large diffuse erythematous-squamous foci with indistinct contours, symmetric location, and fine desquamation of skin. SCORAD was 47, DLQI was 19 (Fig. 2).

Diagnosis. Severe atopic dermatitis was diagnosed based on the patient's complaints, medical history and clinical pattern.

Treatment. UVB 311 nm with abrocitinib therapy was prescribed. UVB 311 nm was performed according to the four times a week irradiation method with an initial dose of 0.1 J/cm^2. Abrocitinib was administered at 200 mg/day for 1 month, followed by a switch to 100 mg/day for 1 month.

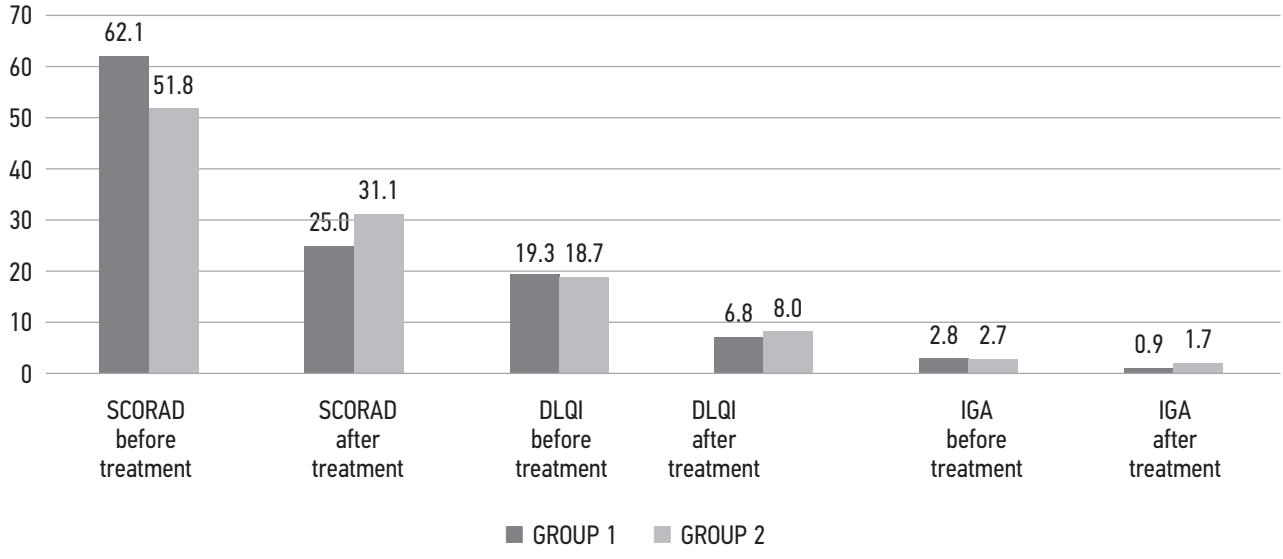

Fig. 1. Comparative assessment of the SCORAD, DLQI index and IGA in patients of the first and second groups at admission and after therapy.

Treatment outcomes. Skin manifestations regressed significantly after one month of therapy (Fig. 3), which was observed in a considerable skin coloration intensity decrease, absence of desquamation and lichenification. The itching was resolved and the patient's condition improved. The SCORAD index decreased 2.2 times and comprised 21, the DLQI was 7.

Case 2 (group 2: UVB 311 nm phototherapy with the standard therapy according to indications). Patient K., male, born in 1994. Hospitalized in Clinic for Skin and Venereal Diseases named after V.A. Rakhmanov on January 22, 2024, with complaints on skin rashes on trunk, upper and lower extremities, and itching. Diagnosis at admission was atopic dermatitis.

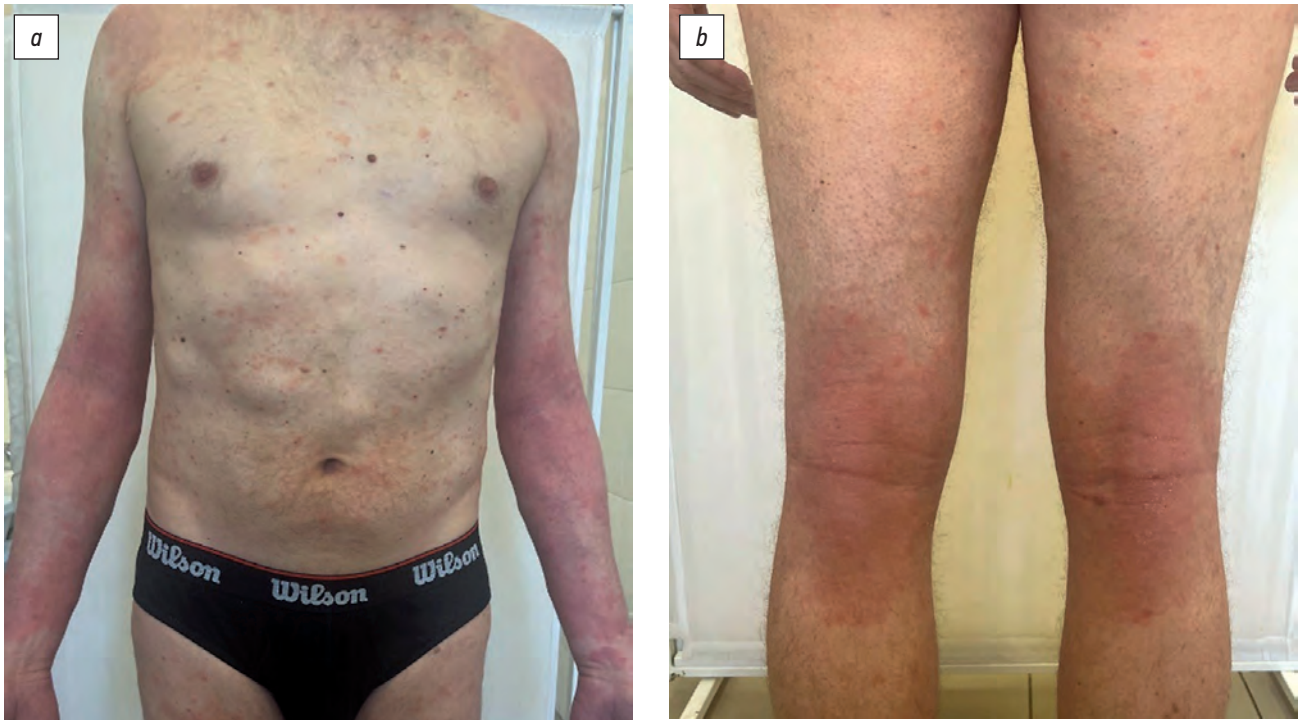

Fig. 2. Patient N., diagnosis "Atopic dermatitis", local status before prescription of therapy: *a* — chest, upper and lower extremities; *b* — lower extremities (fossa poplitea).

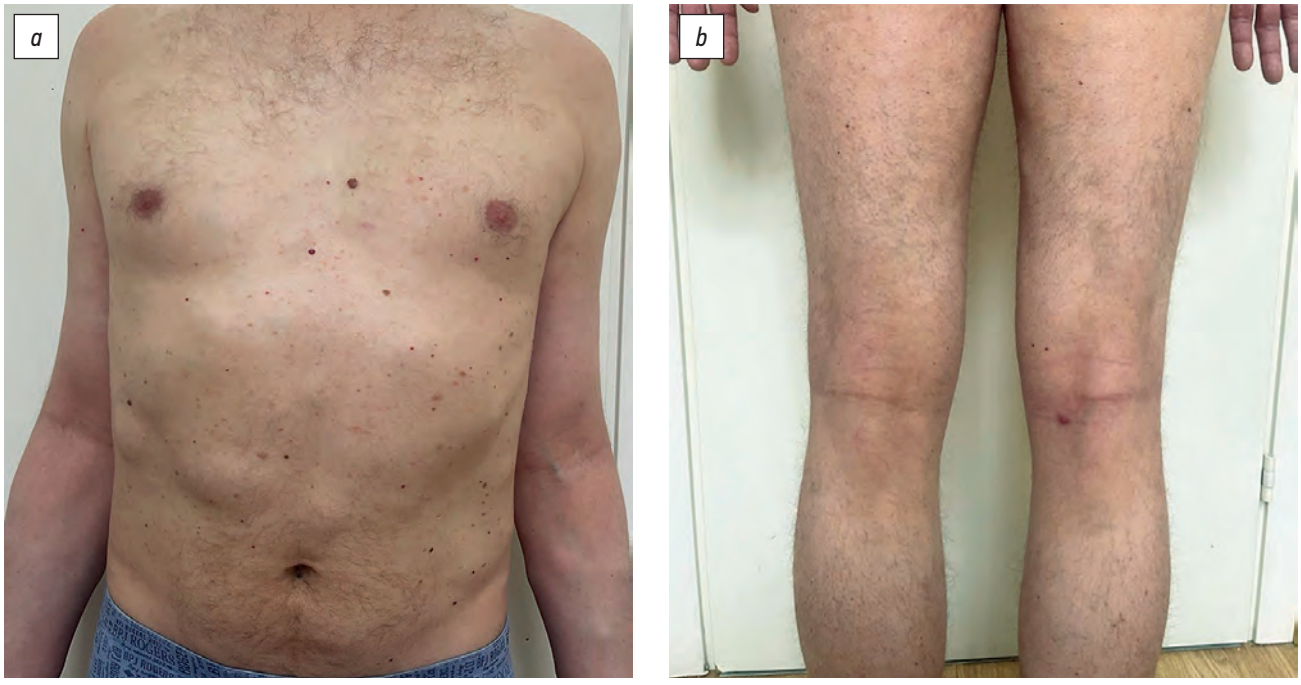

Fig. 3. Patient N., diagnosis "Atopic dermatitis", skin condition after 1 month of UVB-311 nm + abrocitinib: *a* — chest, upper extremities; *b* — lower extremities.

DOI: https://doi.org/10.17816/dv632984

Medical history. Has been considering himself ill since early childhood, when first rashes with itching on upper and lower extremities started to bother him. Topical corticosteroids therapy was performed repeatedly but had a temporary positive effect. Remissions were short, whereas exacerbations became longer. The patient was admitted to Clinic for Skin and Venereal Diseases named after V.A. Rakhmanov for comprehensive treatment.

Status localis on admission. Skin lesions of chronic inflammatory nature. Skin rash was symmetrically localized on trunk, upper and lower extremities. It was represented by hyperemia foci, erosions, scales, excoriations, and branny desquamation. The SCORAD was 39, the DLQI was 16 (Fig. 4).

Diagnosis. Moderate atopic dermatitis was diagnosed based on the patient's complaints, medical history and clinical pattern.

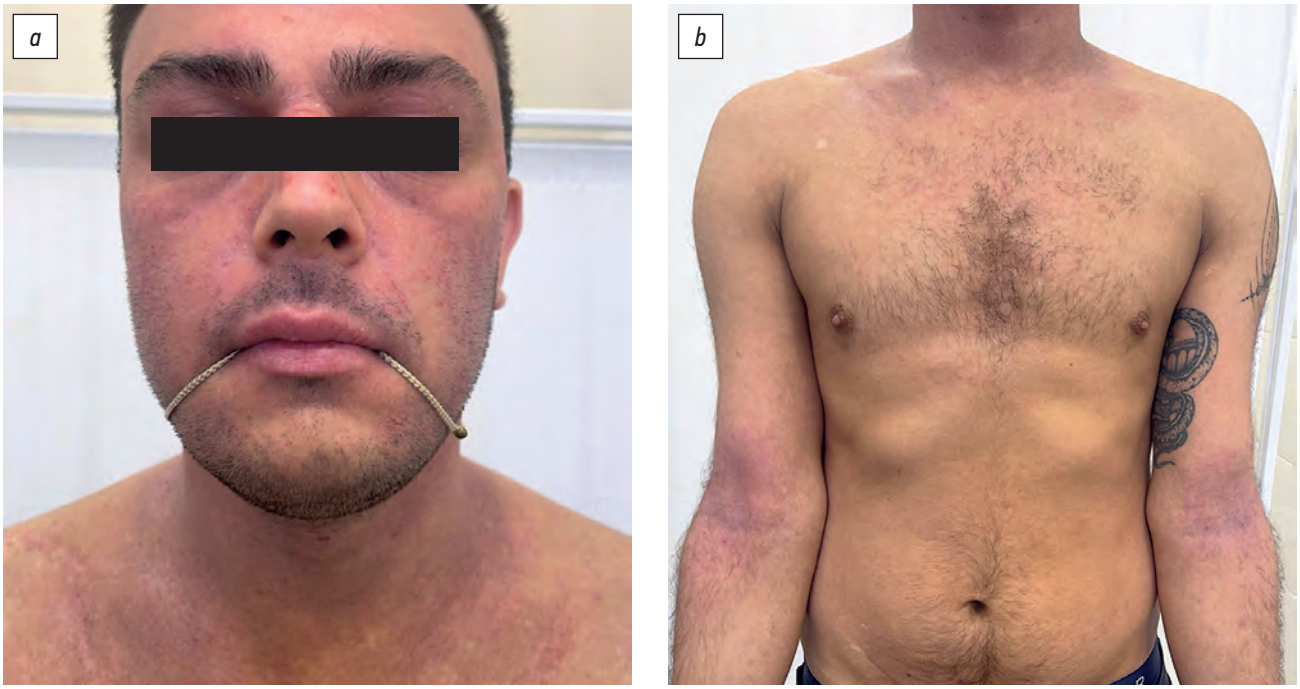

Fig. 4. Patient K., diagnosis "Atopic dermatitis", local status before prescription of therapy: *a* — skin condition of face, neck; *b* — chest, upper extremities.

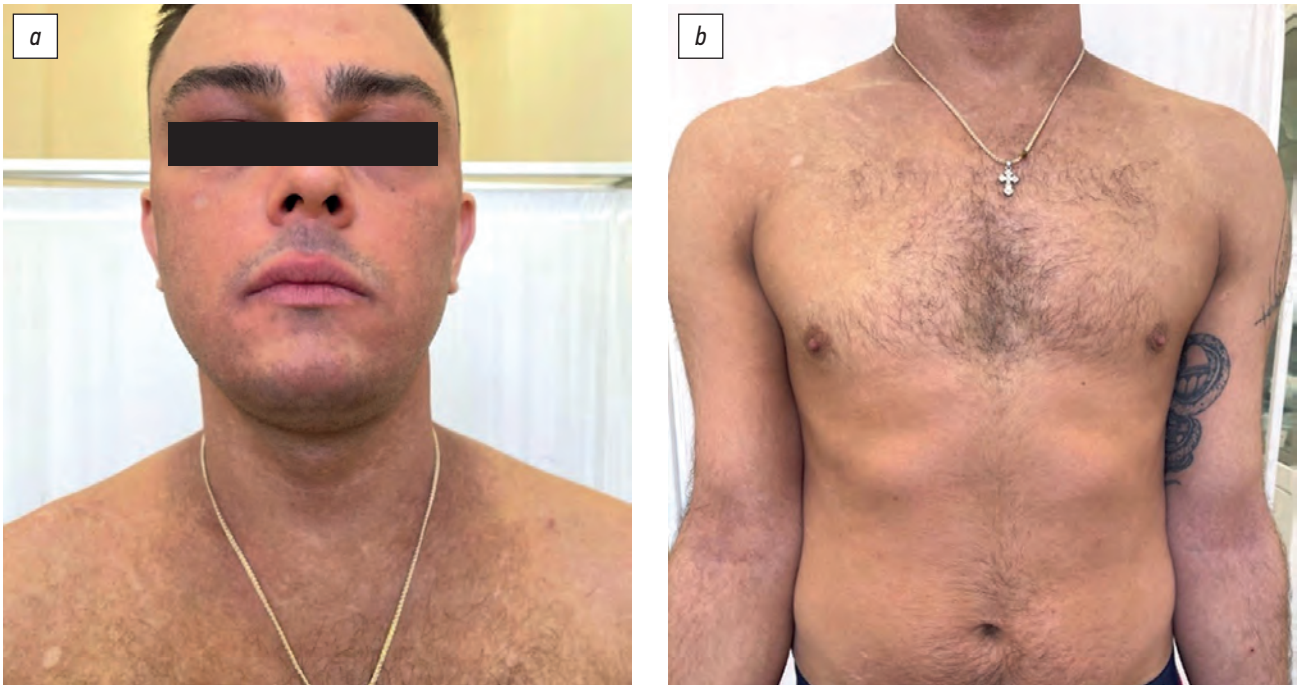

Fig. 5. Patient K., diagnosis "Atopic dermatitis", skin condition after 1 month of 311 nm UVB treatment: *a* — skin condition of face, neck; *b* — chest, upper extremities.

DOI: https://doi.org/10.17816/dv632984

Treatment. According to clinical guidelines, UVB 311 nm phototherapy with the standard therapy was prescribed. UVB 311 nm was performed according to the four times a week irradiation method with an initial dose of 0.1 J/cm^2.

Treatment outcomes. Skin manifestations regressed significantly after one month of therapy (Fig. 5), which was observed in coloration intensity decrease, resolved lichenification, and absence of desquamation. Subjectively, itching was resolved. SCORAD index decreased 1.4 times and comprised 27, the DLQI was 9. The patient's condition improved while performing UVB 311 nm.

DISCUSSION

The use of UVB 311 nm with abrocitib proved to be more clinically effective in comparison with UVB 311 nm monotherapy in our study. It solves the problem of treatment of persistent severe atopic dermatitis. High clinical efficacy of abrocitinib is demonstrated by He Q. (2024), Wan H. (2022), Deeks E.D. (2021). The quality of life is the main goal of therapeutic interventions according to the new paradigm of clinical medicine. In our study, the use of abrocitinib at a dose of 200 mg/day in the first month and 100 mg/day in the second month of atopic dermatitis treatment resulted in an improvement in the patients' quality of life, clinical efficacy of the therapy and a positive long-term prognosis of the disease.

CONCLUSION

Thus, the combined use of abrocitinib has demonstrated high clinical efficacy in a series of atopic dermatitis clinical cases. In a short period, 200 mg abrocitinib with UVB 311 nm showed higher clinical efficacy than the standard treatment. Abrocitinib significantly reduces atopic dermatitis treatment duration. However, further studies are needed to evaluate the drug safety and efficacy in atopic dermatitis therapy.

ADDITIONAL INFORMATION

Funding source. This publication was not supported by any external sources of funding.

Competing interests. The authors declare that they have no competing interests.

Authors' contribution. All authors made a substantial contribution to the conception of the work, acquisition, analysis, interpretation of data for the work, drafting and revising the work, final approval of the version to be published and agree to be accountable for all aspects of the work. O.Yu. Olisova, N.G. Kochergin — editing and making significant edits to the article in order to increase the scientific value of the clinical case, development of research design; K.A. Myzina — collection and processing of clinical material to describe the clinical case; A.H. Abdulridha — editing and making significant edits to the article in order to increase the scientific value, revision of the source text, description of the clinical case, development of research design, statistical processing of research results, editing of the text of the article.

Consent for publication. The patients' voluntarily signed an informed consent for the publication of personal medical information in anonymised form in the Russian Journal of Skin and Venereal Diseases, as well as for the transfer of an electronic copy of the signed informed consent form to the journal's editorial staff.

REFERENCES

1. Weil C, Sugerman PB, Chodick G, et al. Epidemiology and economic burden of atopic dermatitis: Real-world retrospective data from a large nationwide Israeli healthcare provider database. *Adv Ther.* 2022;39(6):2502–2514. doi: 10.1007/s12325-022-02120-6

2. Cork MJ, Danby SG, Ogg GS. Atopic dermatitis epidemiology and unmet need in the United Kingdom. *Dermatolog Treat.* 2020;31(8):801–809. doi: 10.1080/09546634.2019.1655137

3. Tsai TF, Rajagopalan M, Chu CY, et al. Burden of atopic dermatitis in Asia. *J Dermatol.* 2019;46(10):825–834. doi: 10.1111/1346-8138.15048

4. Barbarot S, Auziere S, Gadkari A, et al. Epidemiology of atopic dermatitis in adults: Results from an international survey. *Allergy.* 2018;73(6):1284–1293. doi: 10.1111/all.13401

5. Hülpüsch C, Weins AB, Traidl-Hoffmann C, Reiger M. A new era of atopic eczema research: Advances and highlights. *Allergy.* 2021;76(11):3408–3421. doi: 10.1111/all.15058

6. Darsow U, Wollenberg A, Simon D, et al.; European Task Force on Atopic Dermatitis/EADV Eczema Task Force. ETFAD/EADV eczema task force 2009 position paper on diagnosis and treatment of atopic dermatitis. *J Eur Acad Dermatol Venereol.* 2010;24(3):317–28. doi: 10.1111/j.1468-3083.2009.03415.x

7. Kochergin NG. Skin barier, xerosis, kuperosis. *Russ J Allergy.* 2013;(6):9–12. EDN: RTLFJD

8. Siegfried EC, Jaworski JC, Kaiser JD, Hebert AA. Systematic review of published trials: Long-term safety of topical corticosteroids and topical calcineurin inhibitors in pediatric patients with atopic dermatitis. *BMC Pediatr.* 2016;16:75. doi: 10.1186/s12887-016-0607-9

9. Salvati L, Cosmi L, Annunziato F, et al. From emollients to biologicals: Targeting atopic dermatitis. *Int J Mol Sci.* 2021;22(19):10381. doi: 10.3390/ijms221910381

10. Frazier W, Bhardwaj N. Atopic dermatitis: Diagnosis and treatment. *Am Fam Physician.* 2020;101(10):590–598.

11. Wollenberg A, Barbarot S. Consensus-based European guidelines for treatment of atopic eczema (atopic dermatitis) in adults and children: Part I. J Eur Acad Dermatol Venereol. 2018;32(5):657–682. doi: 10.1111/jdv.14891

12. Eichenfield LF, Stripling S, Fung S, et al. recent developments and advances in atopic dermatitis: A focus on epidemiology,

pathophysiology, and treatment in the pediatric setting. *Paediatr Drugs.* 2022;24(4):293–305. doi: 10.1007/s40272-022-00499-x
13. Wang Q, Liu L, Gao S, et al. Guidelines for the management of atopic dermatitis in children: A systematic review. *Int Arch Allergy Immunol.* 2023;184(2):132–141. doi: 10.1159/000527007
14. He Q, Xie X, Chen Q, et al. Janus kinase inhibitors in atopic dermatitis: An umbrella review of meta-analyses. *Front Immunol.* 2024;15:1342810. doi: 10.3389/fimmu.2024.1342810
15. Wan H, Jia H, Xia T, Zhang D. Comparative efficacy and safety of abrocitinib, baricitinib, and upadacitinib for moderate-to-severe atopic dermatitis: A network meta-analysis. *Dermatol Ther.* 2022;35(9):e15636. doi: 10.1111/dth.15636
16. Deeks ED, Duggan S. Abrocitinib. *Drugs.* 2021;81(18):2149–2157. doi: 10.1007/s40265-021-01638-3
17. Mikhailova D, Ungar B, Renert-Yuval Y, Guttman-Jassky E. Oral Janus kinase inhibitors for atopic dermatitis. *Ann Allergy Asthma Immunol.* 2023;130:577–592. doi: 10.1016/j.anai.2023.01.020
18. Tsiogka A, Kyriazopoulou M, Kontochristopoulos G, et al. The JAK/STAT pathway and its selective inhibition in the treatment of atopic dermatitis: A systematic review. *J Clin Med.* 2022;11(15):4431. doi: 10.3390/jcm11154431
19. Blauvelt A, Silverberg JI, Lynde CW, et al. Abrocitinib induction, randomized withdrawal, and retreatment in patients with moderate-to-severe atopic dermatitis: Results from the JAK1 atopic dermatitis efficacy and safety (JADE) REGIMEN phase 3 trial. *J Am Acad Dermatol.* 2022;86(1):104–112. doi: 10.1016/j.jaad.2021.05.075
20. Olisova OYu, Vladimirov VV, Muraxovskaya EK. UVA 370 nm phototherapy of atopic dermatitis. *Russ J Skin Venereal Dis.* 2013;(6):22–27. doi: 10.17816/dv36837.
21. Olisova OYu, Monaxov SA, Korchazhkina NB. Narrow-wave phototherapy 311 nm in the treatment of patients with atopic dermatitis. *Russ J Skin Venereal Dis.* 2012;(3):25–27. EDN: PFBPCL doi: 10.17816/dv36660

СПИСОК ЛИТЕРАТУРЫ

1. Weil C., Sugerman P.B., Chodick G., et al. Epidemiology and economic burden of atopic dermatitis: Real-world retrospective data from a large nationwide Israeli healthcare provider database // Adv Ther. 2022;39(6):2502–2514. doi: 10.1007/s12325-022-02120-6
2. Cork M.J., Danby S.G., Ogg G.S. Atopic dermatitis epidemiology and unmet need in the United Kingdom // Dermatolog Treat. 2020;31(8):801–809. doi: 10.1080/09546634.2019.1655137
3. Tsai T.F., Rajagopalan M., Chu C.Y., et al. Burden of atopic dermatitis in Asia // J Dermatol. 2019;46(10):825–834. doi: 10.1111/1346-8138.15048
4. Barbarot S., Auziere S., Gadkari A., et al. Epidemiology of atopic dermatitis in adults: Results from an international survey // Allergy. 2018;73(6):1284–1293. doi: 10.1111/all.13401
5. Hülpüsch C., Weins A.B., Traidl-Hoffmann C., Reiger M. A new era of atopic eczema research: Advances and highlights // Allergy. 2021;76(11):3408–3421. DOI: 10.1111/all.15058
6. Darsow U., Wollenberg A., Simon D., et al.; European Task Force on Atopic Dermatitis/EADV Eczema Task Force. ETFAD/EADV eczema task force 2009 position paper on diagnosis and treatment of atopic dermatitis // J Eur Acad Dermatol Venereol. 2010;24(3):317–28. doi: 10.1111/j.1468-3083.2009.03415.x
7. Кочергин Н.Г. Кожный барьер, ксероз и купероз // Российский аллергологический журнал. 2013. № 6. С. 9–12. EDN: RTLFJD
8. Siegfried E.C., Jaworski J.C., Kaiser J.D., Hebert A.A. Systematic review of published trials: Long-term safety of topical corticosteroids and topical calcineurin inhibitors in pediatric patients with atopic dermatitis // BMC Pediatr. 2016;16:75. doi: 10.1186/s12887-016-0607-9
9. Salvati L., Cosmi L., Annunziato F., et al. From emollients to biologicals: Targeting atopic dermatitis // Int J Mol Sci. 2021;22(19):10381. doi: 10.3390/ijms221910381
10. Frazier W., Bhardwaj N. Atopic dermatitis: Diagnosis and treatment // Am Fam Physician. 2020;101(10):590–598.
11. Wollenberg A., Barbarot S. Consensus-based European guidelines for treatment of atopic eczema (atopic dermatitis) in adults and children: Part I // J Eur Acad Dermatol Venereol. 2018;32(5):657–682. doi: 10.1111/jdv.14891
12. Eichenfield L.F., Stripling S., Fung S., et al. Recent developments and advances in atopicdermatitis: A focus on epidemiology, pathophysiology, and treatment in the pediatric setting // Paediatr Drugs. 2022;24(4):293–305. doi: 10.1007/s40272-022-00499-x
13. Wang Q., Liu L., Gao S., et al. Guidelines for the management of atopic dermatitis in children: A systematic review // Int Arch Allergy Immunol. 2023;184(2):132–141. doi: 10.1159/000527007
14. He Q., Xie X., Chen Q., et al. Janus kinase inhibitors in atopic dermatitis: An umbrella review of meta-analyses // Front Immunol. 2024;15:1342810. doi: 10.3389/fimmu.2024.1342810
15. Wan H., Jia H., Xia T., Zhang D. Comparative efficacy and safety of abrocitinib, baricitinib, and upadacitinib for moderate-to-severe atopic dermatitis: A network meta-analysis // Dermatol Ther. 2022;35(9):e15636. doi: 10.1111/dth.15636
16. Deeks E.D., Duggan S. Abrocitinib // Drugs. 2021;81(18):2149–2157. doi: 10.1007/s40265-021-01638-3
17. Mikhailova D., Ungar B., Renert-Yuval Y., Guttman-Jassky E. Oral Janus kinase inhibitors for atopic dermatitis // Ann Allergy Asthma Immunol. 2023;130:577–592. doi: 10.1016/j.anai.2023.01.020
18. Tsiogka A., Kyriazopoulou M., Kontochristopoulos G., et al. The JAK/STAT pathway and its selective inhibition in the treatment of atopic dermatitis: A systematic review // J Clin Med. 2022;11(15):4431. doi: 10.3390/jcm11154431
19. Blauvelt A., Silverberg J.I., Lynde C.W., et al. Abrocitinib induction, randomized withdrawal, and retreatment in patients with moderate-to-severe atopic dermatitis: Results from the JAK1 atopic dermatitis efficacy and safety (JADE) REGIMEN phase 3 trial // J Am Acad Dermatol. 2022;86(1):104–112. doi: 10.1016/j.jaad.2021.05.075

20. Олисова О.Ю., Владимиров В.В., Мураховская Е.К. Фототерапия атопического дерматита УФА-лучами 370 нм // Российский журнал кожных и венерических болезней. 2013. № 6. С. 22–27. EDN: RTHZZB doi: 10.17816/dv36837

21. Олисова О.Ю., Монахов С.А., Корчажкина Н.Б. Узковолновая фототерапия 311 нм в лечении больных атопическим дерматитом // Российский журнал кожных и венерических болезней. 2012. № 3. С. 25–27. EDN: PFBPCL doi: 10.17816/dv36660

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