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Review

Trifarotene: a new chapter in the treatment of acne. An overview of the data on efficacy and safety profile of a fourth-generation retinoid

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ABSTRACT

Vulgar acne is a chronic inflammatory skin disease that has a significant impact on patients' quality of life. The search for new highly effective and treatments with favorable safety profile remains relevant due to the high incidence in the population.

The launch of a 4th generation retinoid, trifarotene, which has a selective mechanism of action on RAR-γ (γ-retinoic acid receptors agonist), represents a new era in topical therapy of acne vulgaris and is of particular interest to practical healthcare.

A systematic literature overview in PubMed, Google Scholar, and ClinicalTrials.Gov databases was conducted to evaluate the mechanism of action, efficacy, and safety profile of the selective 4th generation retinoid, trifarotene 50 μg/g (0,005%) in dosage form topical cream.

In a systematic overview, 12 contemporary studies (2015–2023) were selected confirming the high efficacy of trifarotene in protocols for the treatment of acne vulgaris with localization on both facial and truncal skin. The drug demonstrates a unique ability to modulate cell adhesion, optimize transepidermal water loss and reduce the activity of membrane metalloendopeptidases, which determines its proven efficacy.

Trifarotene, an innovative 4th generation topical retinoid approved by the FDA in 2019 for the treatment of acne in patients over 9 years of age, opens new possibilities in the treatment of acne vulgaris. Its selective activity to RAR-γ receptors, proven efficacy and favorable safety profile make it a promising agent in therapeutic practice.

Keywords: acne; trifarotene; retinoid; external therapy.

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Научный обзор

Трифаротен: новая глава в лечении акне. Обзор данных по эффективности и профилю безопасности ретиноида четвёртого поколения

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АННОТАЦИЯ

Вульгарные акне — хроническое воспалительное заболевание кожи, оказывающее значительное влияние на качество жизни пациентов. Поиск новых, высокоэффективных, с хорошим профилем безопасности методов лечения остаётся актуальным в связи с высоким уровнем заболеваемости в популяции.

Выход ретиноида четвёртого поколения трифаротена, обладающего селективным механизмом действия на RAR-γ (агонист γ-рецепторов ретиноевой кислоты), представляет собой новую эру в топической терапии вульгарных акне и особый интерес для практического здравоохранения.

Проведён систематический анализ литературы в базах данных PubMed, Google Scholar, ClinicalTrials.Gov с целью оценки механизма действия, клинической эффективности и профиля безопасности селективного ретиноида четвёртого поколения трифаротена 50 мкг/г (0,005%) в лекарственной форме крема для наружного применения. При систематическом анализе было отобрано 12 современных исследований (за 2015–2023 годы), подтверждающих высокую эффективность трифаротена в протоколах лечения вульгарных акне с локализацией как на коже лица, так и коже туловища. Препарат демонстрирует уникальную способность модулировать клеточную адгезию, оптимизировать трансэпидермальную потерю воды и уменьшать активность мембранных металлоэндопептидаз, что обусловливает его эффективность.

Трифаротен — инновационный топический ретиноид четвёртого поколения, одобренный FDA в 2019 году для лечения акне у пациентов старше 9 лет, открывает новые возможности в лечении вульгарных акне. Селективная активность к рецепторам RAR-γ и доказанная эффективность с хорошим профилем безопасности делают препарат перспективным средством в терапевтической практике.

Ключевые слова: акне; трифаротен; ретиноид; наружная терапия.

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ЭКО•ВЕКТОР

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BACKGROUND

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous complex, resulting from a complex interaction of genetic, physiological, microbiological, and immunological features [1].

A 2024 epidemiologic study involving 50,522 respondents from 20 countries indicated a prevalence of acne vulgaris cases in 20.5% of the general population [2]. Furthermore, acne vulgaris occurs in 85% of individuals under the age of 18, often persisting into adulthood. The high prevalence of dermatosis in a significant number of cases is further complicated by the development of the post-acne symptom complex.

While the majority of lesions are located on the face, acne can also manifest on the neck, chest, and back. These lesions have a more pronounced impact on patients' quality of life compared to acne localized only on the face [3]. In addition to the physical discomfort associated with acne, patients with acne often experience stigmatization in society. For instance, A. Shields et al. [5] conducted an Internet survey to assess the prevalence and severity of stigmatization of individuals with acne (*n*=1,357; mean age: 42 years; 918 women; 439 men). Those with severe acne reported feeling less comfortable making friends, having visitors, engaging in physical contact, dating, and posting pictures on social media than those without acne. In contrast, healthy respondents rated people with severe acne as unattractive, unintelligent, unfriendly, immature, and untrustworthy [5].

The treatment of acne vulgaris, which can manifest in various forms and locations, necessitates the development of novel topical agents with rapid and sustained therapeutic efficacy. Modern topical retinoids, a class of molecules derived from vitamin A or exhibiting structural and/or functional similarity to vitamin A, have long been established as the primary treatment for acne. The distinctive therapeutic effect of biologically active retinoids is attributed to their capacity to exert a pathogenetic effect on nuclear retinoic acid receptors (RARs) and retinoid X receptors (RXRs) [6]. Until recently, only three generations of retinoids were distinguished: the first generation includes nonaromatic retinoids (tretinoin, isotretinoin, and alitretinoin); the second generation includes monoaromatic retinoids (acitretin and etretinate); and the third generation includes polyaromatic retinoids (bexarotene, tazarotene, and adapalene) [7].

Over half a century after the initial introduction of the topical retinoid tretinoin, and approximately three decades after the third-generation retinoid adapalene (introduced in 1996), the therapeutic armamentarium expanded with the first-of-its-kind fourth-generation retinoid, trifarotene. Unlike other topical retinoids, trifarotene is a potent selective agonist of RAR-γ (the most common RAR found in the skin), potentially preventing RAR-β-mediated side effects, such as flaking, erythema, and swelling of the skin [7, 8]. In 2014, the treatment was granted orphan drug status for treating lamellar ichthyosis[1]. Subsequently, in October 2019, it was approved by the US Food and Drug Administration for the treatment of acne in individuals aged 9 and older[2] [8]. This selective RAR agonist demonstrates a significant pathogenetic advantage by binding to the RAR-γ receptor 20-fold more strongly than to the RAR-α and RAR-β receptors while showing no interaction with RXR receptors. This contributes to its clinical efficacy at a low concentration of active ingredient (50 μg/g or 0.005%) and mitigates side effects typical of second- and third-generation retinoids [9]. The selective selectivity of trifarotene distinguishes it from first- and second-generation retinoids, which target all three receptors, and third-generation retinoids, which target RAR-β and RAR-γ receptors [9]. Consequently, the non-selective action on all RAR receptors provides a pronounced efficacy of first- and second-generation retinoids against acne but also contributes to the appearance of pronounced dermatologic side effects at the application site, such as erythema and scaling (Table 1).

Trifarotene significantly affects gene expression by regulating key processes in the skin, namely, differentiation, keratinocyte keratinization, desquamation, and cell adhesion, showing higher efficacy in the induction of gene expression compared to, for example, tazarotene [11]. Pharmacokinetic studies have demonstrated that trifarotene remains stable in keratinocytes for 24 hours but is rapidly (in less than five minutes) degraded by liver enzymes. In contrast, the tazarotenic acid metabolite persists in hepatic microsomes for a longer period of time, suggesting a potentially better systemic safety profile for trifarotene. Furthermore, trifarotene has exhibited a more pronounced comedolytic effect than other retinoids in mouse models and anti-inflammatory and depigmenting properties in laboratory studies [9, 11].

A comprehensive genomic analysis identified three novel pathways of trifarotene's mechanisms of action that highlight its specific pharmacological properties [11]:

1. Modulation of cell adhesion: Trifarotene regulates semidesmosomes, significantly reducing the expression of the dystonin protein. This destabilizes adhesive interactions between cells, promoting keratinocyte migration and enhancing the comedonolytic ability of tripharotene.
2. Regulation of skin transport and hydration: Trifarotene promotes skin hydration by activating aquaporin-3 channels and the enzyme peptidyl-arginine deiminase 1, thereby affecting the skin's protective function.

[1] Trifarotene under the name Aklief has been registered by the Ministry of Health of Russia as the regulatory authority of the EAEU for patients aged 12 and older. Access mode: https://base.garant.ru/51551247/?ysclid=lus1a266o5112758454.

[2] FDA [Internet]. Novel drug approvals for 2019. Access mode: http://www.fda.gov.

Table 1. Interaction of retinoids with RAR isoforms*

Таблица 1. Взаимодействие ретиноидов с изоформами RAR*

Receptors		RAR-α	RAR-β	RAR-γ
Expression in tissues		Lungs, spleen, gallbladder	Placenta, prostate, bladder, kidneys, heart	Skin
Drug	Tazarotene	+	+	+
	Tretinoin	+	+	+
	Trifarotene	-	-	+
	Adapalene	-	+	+

Примечание. * Из всех представленных препаратов только трифаротен селективен к RAR-γ. Важность селективности рецепторов подтверждается снижением побочных эффектов, связанных с действием на другие рецепторы.
Note. * Of all the presented drugs, only trifarotene is selective to RAR-γ. The importance of receptor selectivity is confirmed by the reduction of side effects associated with action on other receptors.

3. Inhibition of proteolytic activity: Trifarotene reduces the activity of membrane metalloendopeptidase, a key enzyme in elastin degradation and wrinkle formation, improving skin texture in a way that other retinoids do not.

This effect is particularly interesting because it suggests that trifarotene, by reducing the level of matrix metalloproteinases, may have short- and long-term effects on skin quality. It may prevent the development of post-acne scars and exhibit anti-aging effects in addition to its impact on acne. Thus, the described research results emphasize the uniqueness of trifarotene and the possibility of its use in clinical practice [11].

A prospective study conducted by B. Dreno et al. [12] in France demonstrated that trifarotene affects both epidermal and immune mechanisms of the pathogenesis of acne vulgaris. Sequencing revealed a set of 67 genes modulated by trifarotene, primarily involved in cell migration, inflammation, and reorganization of the extracellular matrix. The changes in cellular expression were similar in both trifarotene treatment and spontaneously resolving lesions. Nevertheless, only trifarotene treatment affected SPP1+ macrophages, a subset of highly proliferative macrophages recently identified in fibrotic tissue [12].

CLINICAL DATA ON THE SAFETY AND EFFICACY OF TRIFAROTENE

PERFECT 1 and PERFECT 2 phase III studies

The phase III studies, PERFECT 1 and PERFECT 2, comprised two large international multicenter clinical trials (Tables 2 and 3). These studies were conducted simultaneously in 2015–2017 in different countries of the world and had an identical design. The studies included patients with moderately severe acne with localization of rashes on the skin of the face and trunk. A total of 2,420 patients aged 9 years and older participated in the studies, with 1,214 patients receiving trifarotene 50 mcg/g and 1,206 patients receiving trifarotene cream base (placebo). The data from PERFECT 1 and PERFECT 2 studies demonstrate that the treatment is more effective in achieving clear skin according to the five-point Investigator's/Physician's Global Assessment (IGA) and Physician's Global Assessment (PGA) for facial and trunk skin, respectively. The data show a more pronounced reduction in both inflammatory and non-inflammatory skin lesions. Significant positive changes were observed following the commencement of acne therapy with trifarotene on facial skin and after two weeks on trunk skin [13]. These results are consistent with the clinical outcomes as assessed by physicians [13]. Thus, trifarotene demonstrates pronounced clinical efficacy in treating moderate acne, significantly improving skin conditions in patients 9 years and older, both on the facial skin and on the trunk (Table 3)

Long-term clinical trials

A 52-week international clinical trial involving 453 patients was also conducted to determine the long-term effects of trifarotene. Investigators adjusted the frequency of trifarotene application (every other day) in case of tolerability issues. In the event of issues pertaining to ability or discontinuation of treatment, the IGA (for the facial process) and PGA (for the trunk process) scores were evaluated based on efficacy. This was done in accordance with the achievement of a clear skin score, as indicated by the absence of both an IGA score of 0 and a PGA score of 0.

The efficacy of trifarotene treatment demonstrated consistent and progressive improvement over the 52-week follow-up period, exceeding the initial results. The efficacy rates of the treatment, as determined by the IGA and PGA, at weeks 12, 20, 26, 38, and 52 were 26.6%, 43.3%, 50.1%, 57.6%, and 65.1%, respectively, for the IGA

Table 2. Clinical studies on the efficacy and safety of trifarotene in acne

Таблица 2. Клинические исследования эффективности и безопасности трифаротена при акне

Studies	Years	Identification no.	Study design	Study groups	Number of patients	Status/outcomes
Efficacy and safety of CD5789 (trifarotene) 50 μg/g cream versus placebo in acne vulgaris	2015–2017	NCT02566369 PERFECT 1	Distribution: randomized Intervention model: parallel spreading Blinding: four-way (participant, clinician, researcher, and outcome evaluator)	Drug: CD5789 (trifarotene) 50 μg/g cream Placebo: cream base	1208	Completed (Table 3)
A double-blind controlled study of the efficacy and safety of CD5789 (trifarotene) 50 μg/g cream versus placebo cream in acne vulgaris	2015–2017	NCT02556788 PERFECT 2	Distribution: randomized Intervention model: parallel spreading Blinding: four-way (participant, clinician, researcher, and outcome evaluator)	Drug: CD5789 (trifarotene) 50 μg/g cream Placebo: cream base	1212	Completed (Table 3)
CD5789 (trifarotene), a long-term safety study in the treatment of acne vulgaris	2015–2017	NCT02189629 SATISFY 52-week study	Interventional model: single-group Blinding: none	Study group: trifarotene cream	453	Completed (Table 3)
Use of trifarotene 50 μg/g cream in the treatment of moderate acne vulgaris on the face and trunk	2019	NCT03915860	Interventional model: single-group Blinding: none	Application of trifarotene 50 μg/g topically once daily in the evening for 24 weeks	47	Completed. No results published
A study comparing the efficacy and safety of trifarotene cream when used in conjunction with an oral antibiotic for the treatment of severe acne vulgaris	2020–2021	NCT04451330 DUAL	Distribution: randomized Intervention model: parallel spreading Blinding: double-blinded (participant-researcher)	Drug: trifarotene cream Drug: doxycycline Placebo: trifarotene cream base Placebo: placebo of doxycycline	202	Completed. Results not published. Combination therapy with a topical retinoid and an oral antibiotic is an effective treatment for severe acne with a rapid onset of action and good safety and tolerability
Evaluation of Aklief efficacy in acne-induced post-inflammatory hyperpigmentation	2021–2022	NCT05089708 LEAP	Distribution: randomized Intervention model: parallel spreading Blinding: double-blinded (participant-researcher)	Study group: trifarotene cream (thin layer of trifarotene cream 50 μg/g on the face once daily in the evening for 24 weeks). Placebo group: cream base (topical application once daily in the evening for 24 weeks)	123	Completed. Results published as an E-poster at EADV 2023
Study of trifarotene cream for assessing the risk of post-acne scarring	2021–2023	NCT04856904 START	Distribution: randomized Intervention model: parallel spreading Blinding: four-way (participant, clinician, researcher, and outcome evaluator)	Placebo group: placebo (topical application once daily in the evening for 24 weeks). Study group: trifarotene cream	121	Completed. Results not published. Trifarotene was effective and well tolerated in treating moderate to severe facial acne and reducing post-acne atrophic scarring, with total atrophic scarring reduced as early as week 2

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Table 3. Efficacy results from PERFECT 1, PERFECT 2, a 52-week long-term efficacy study

Таблица 3. Результаты эффективности по данным исследований PERFECT 1, PERFECT 2, 52-недельного исследования долгосрочной эффективности

Studies	Study results, %			
PERFECT 1	IGA (face)		PGA (trunk)	
	Trifarotene 29.4	Comparison (placebo): 19.5	Trifarotene 35,7	Comparison (placebo): 25
PERFECT 2	Trifarotene 42.3	Comparison (placebo): 25.7	Trifarotene 42,6	Comparison (placebo): 29.9
52-week study (trifarotene)	IGA (face)		PGA (trunk)	Improvement data from patients
Week 12	26.6		38.6	41.4
Week 20	43.3		54.1	-
Week 26	50.1		58.4	54.8
Week 38	57.6		62.5	-
Week 52	65.1		66.9	66.6

and 38.6%, 54.1%, 58.4%, 62.5%, and 66.9%, respectively, for the PGA. The overall treatment efficacy (as determined by IGA and PGA) reached 57.9% at week 52, a significant increase from the 22.0% efficacy at week 12. Most patients reported an improvement in health-related quality of life (HR-QOL) as assessed by the Dermatology Quality of Life Index (DLQI for adults and C-DLQI for children) [14]. This study demonstrated both long-term efficacy and a favorable safety profile of topical application of trifarotene, as well as a positive impact on the quality of life of patients with moderate acne with localization of rashes on the face and trunk (Tables 2 and 3).

Combined therapy

Trifarotene has been investigated as a combination therapy for treating severe acne (with isolated nodules and cysts) [7]. Patients over 12 were randomized into two groups in a 2:1 ratio. Group 1 received trifarotene cream and doxycycline 120 mg (equivalent to doxycycline 100 mg), while group 2 received trifarotene cream base (placebo) and doxycycline 120 mg placebo for 12 weeks. The absolute number of acne elements was significantly reduced in the group receiving the combination of trifarotene and doxycycline compared to the results of group 2 (p <0.0001). Therefore, the combination of topical trifarotene and doxycycline has demonstrated clinical efficacy and a good safety profile for treating patients with severe acne (with isolated nodules and cysts) [7].

Other applications

Trifarotene has been investigated for treating T-cell lymphoma of the skin and lamellar ichthyosis, but the data have not yet been published. Additionally, the depigmenting properties of trifarotene were evaluated in post-inflammatory hyperpigmentation [15] and its effect on the development of post-acne scars [16]. Furthermore, the bioequivalence and range of possible dosages of the drug for topical application were assessed (Tables 2, 4, and 5).

In a series of clinical cases described by W.G. Lee et al. [17], trifarotene was used for topical therapy of black acanthosis. All patients exhibited a reduction in skin pigmentation within three months of treatment, without the need for additional therapy. During the course of treatment, none of the patients exhibited signs of contact dermatitis [17]. The use of trifarotene in the treatment of black acanthosis has demonstrated efficacy and may be considered for further investigation and incorporation into the therapeutic armamentarium.

A meta-analysis by L. Eichenfield et al. [18] demonstrated that trifarotene is efficacious and well tolerated by patients aged 12–17 years with moderate acne on the face and trunk. Trifarotene monotherapy showed good clinical efficacy, a predictable and controlled safety profile, and topical tolerability. The administration of a single daily overnight application of the drug in a metered-dose package provides convenience for patients. The low concentration of trifarotene (50 μg/g or 0.005%), rapid metabolism in the liver ($t_{1/2}$, 5 minutes), and its rate of excretion without cumulation allow its use on large areas of skin, such as the trunk [18].

In the Russian Federation, the general characterization of the medicinal product Aklief [Reg. certificate LP-#(001233)-(RG-RU) dated 19.09.2022] should be followed for the practical use of trifarotene 50 μg/g. Aklief cream is indicated for patients aged 12 years and older for the external therapy of moderate and severe acne in the presence of numerous comedones, papules, and pustules on the skin of the face and/or trunk. The cream should be applied in a thin layer to the entire acne-affected area of the face (forehead, nose, chin, right and left cheeks) and/or trunk once daily in

Table 4. Bioequivalence studies
Таблица 4. Исследования биоэквивалентности

Studies	Study design	Study groups	Number of patients	Status/ outcomes
Study comparing trifarotene 0.005% and AKLIEF cream in the treatment of acne vulgaris 2023–2023 NCT06063473	Distribution: randomized Intervention model: parallel spreading Blinding: physician researcher Bioequivalence study	Drug: Trifarotene Cream 0.005% (Taro Pharmaceuticals U.S.A., Inc.) Drug: Placebo Drug: AKLIEF Cream (Trifarotene 0.005%, Galderma Laboratories)	762	Completed
Study comparing trifarotene 0.005% and AKLIEF cream in the treatment of acne vulgaris 2022–2023 NCT05550337	Distribution: randomized Intervention model: parallel spreading Blinding: four-way (participant, clinician, researcher, and outcome evaluator) Bioequivalence study	Drug: Trifarotene Cream 0.005% (TEVA PHARMACEUTICALS, INC.) Drug: Placebo Drug: AKLIEF Cream (Trifarotene 0.005%, Galderma Laboratories)	807	Completed

Table 5. Dosage range study
Таблица 5. Исследование диапазона дозировок

Studies	Study design	Study groups	Number of patients	Status/ outcomes
Dosage range study of the CD5789 drug in acne vulgaris 2012–2014 NCT01616654	Distribution: randomized Intervention model: parallel spreading Blinding: four-way (participant, clinician, researcher, and outcome evaluator)	Drug: CD5789 25 μg/g cream Drug: CD5789 50 μg/g cream Drug: CD5789 100 μg/g cream Drug: Tazarotene 0.1% gel Drug: reference product	304	Completed

the evening on clean and dry skin. The duration of treatment with trifarotene should be established by the attending physician based on the clinical condition of the patient. It is recommended that the therapeutic effect be evaluated according to the patient's condition after three months of treatment[3].

Evidence from real-world clinical practice

A small clinical report on the real-life use of trifarotene in three patients with moderately severe acne has been published [19]. The patients applied trifarotene 50 μg/g to the skin of the face and trunk for 12 weeks and completed standardized treatment satisfaction questionnaires. After 12 weeks, inflammatory events were reduced by 20–90% and non-inflammatory events by 22–47% in all three patients. Overall, patient satisfaction was high, with two patients reporting a significant increase in self-esteem. Despite the limited number of participants, this study underscores the significance of evaluating results based on patient feedback, particularly for trunk acne, for which there is a paucity of published literature [19].

Our clinical experience

The V.A. Rakhmanov Clinic of Skin and Venereal Diseases has its own experience of using Aklief cream (trifarotene 50 mcg/g) to treat patients with acne vulgaris. We present our own clinical experience of trifarotene application.

Clinical case 1

Patient K, 19 years of age, was diagnosed with acne vulgaris of medium severity with localization on the back skin. She had experienced the condition since the age of 15, noticing the appearance of rashes on her back. The rashes quickly spread over the entire surface of the back skin, accompanied by moderate itching.

The skin of the face and scalp is oily, with the presence of single comedones. There are no rashes on the neck and décolleté area. However, there are papulopustular multiple rashes on the back skin.

Heredity: Her father had acne vulgaris with similar localization.

Treatment: She had previously applied externally azelaic acid and clindamycin with little effect.

[3] General characteristics of the medicinal product Aclif. Registration certificate LP-№(001233)-(RG-RU) from 19.09.2022. Access mode: https://www.vidal.ru/drugs/aklif?ysclid=lus17oyzlm795762812.

Prescribed treatment: Aklief cream (trifarotene 50 μg/g) externally applied daily once a day in the evening.

Following the administration of the cream for a period of three weeks, a notable (60%) reduction in inflammatory elements was observed. After an additional four weeks, the skin exhibited a complete absence of rashes (Fig. 1).

Clinical case 2

Patient O, 17 years old, was diagnosed with acne vulgaris of medium severity. She has been ill since the age of 12 when she began to notice pronounced greasiness and the appearance of rashes on the skin of her face.

The skin of the face and scalp is oily, exhibiting multiple comedones, papules, and pustules. The neck, décolleté, and back area are free of rashes.

Heredity: Her mother had acne vulgaris in mother with a similar localization.

Treatment: She had previously used doxycycline (100 mg/day), azelaic acid, and alcohol wipes with short-term effects.

Prescribed treatment: Aklief cream (trifarotene 50 μg/g) externally applied daily once a day in the evening. Gentle cleansing and moisturizing with the use of dermatocosmetics was recommended.

Following the administration of the cream for a period of two weeks, a notable (50%) reduction in inflammatory elements was observed. After seven weeks, the skin exhibited no rashes (Fig. 2).

Clinical case 3

Patient K, 23 years of age, was diagnosed with acne vulgaris of medium severity. The patient has been ill since the age of 14, when rashes first appeared on the chest, which eventually spread to the back. The rashes are accompanied by slight itching and discomfort when wearing clothes.

The skin of the face and scalp is oily. There are multiple inflammatory elements in the form of papules and pustules on the skin of the chest and back.

Heredity: His father had acne vulgaris on facial skin.

Treatment: Previously, the condition was treated with external agents containing benzoyl peroxide and clindamycin, but this resulted in only temporary, short-lived improvement.

Prescribed treatment: Aklief cream (trifarotene 50 μg/g) is applied externally once a day in the evening.

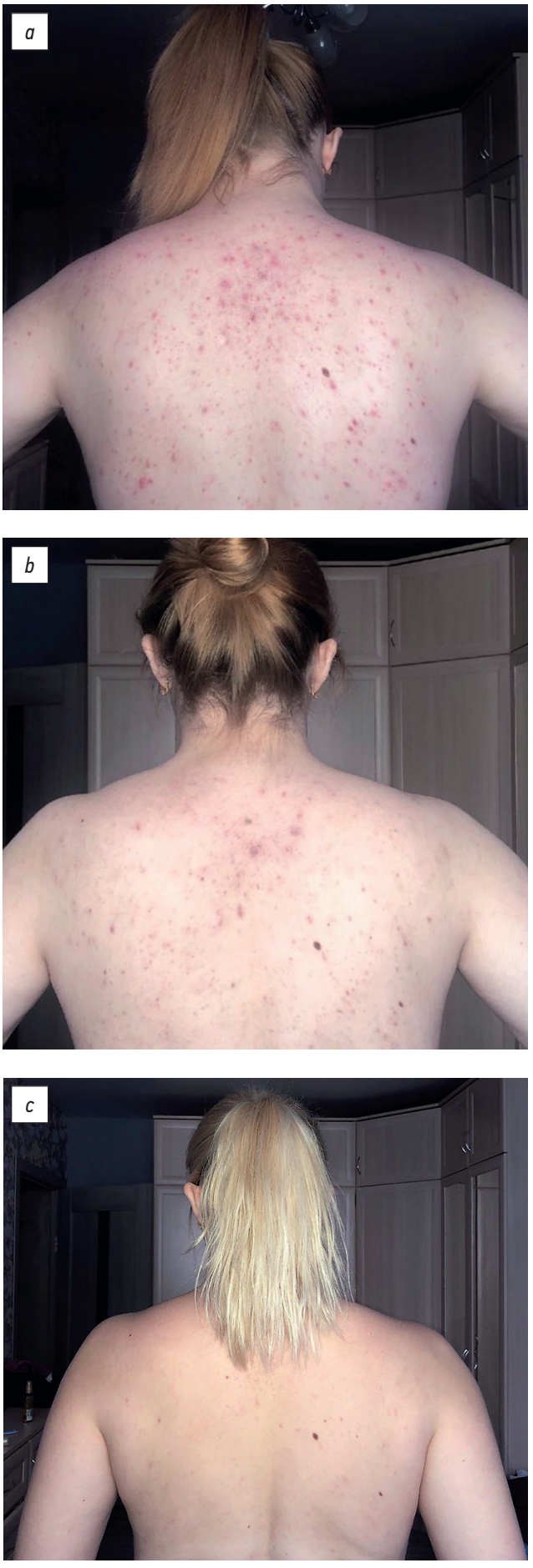

Fig. 1. Patient K., 19 years old, diagnosis of moderately severe vulgar acne with localisation on the back skin: *a* — papulopustular multiple rashes on the back skin before treatment; *b* — 60% regression of rashes after 3 weeks of treatment; *c* — complete regression of rashes after 8 weeks of treatment.

Рис. 1. Пациентка К., 19 лет, диагноз «Вульгарные акне среднетяжёлой степени с локализацией на коже спины»: *a* — папулопустулёзные множественные высыпания на коже спины до лечения; *b* — регресс высыпаний на 60% через 3 недели лечения; *c* — полный регресс высыпаний через 8 недель лечения.

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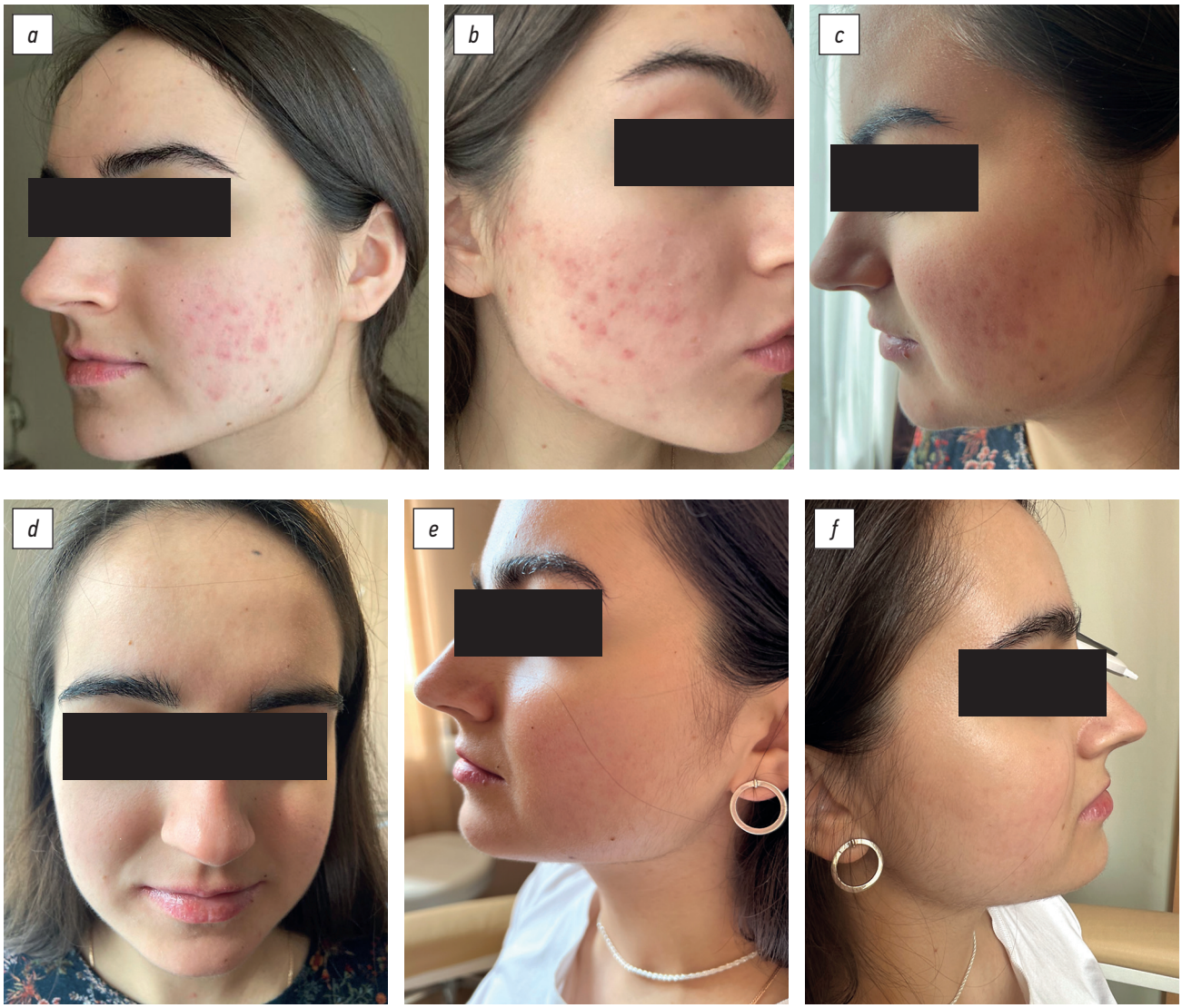

Fig. 2. Patient O., 17 years old, diagnosed with moderate acne vulgaris: *a*, *b* — skin condition before treatment; *c* — marked regression of inflammatory elements (by 50%) after 2 weeks of cream application; *d–f* — complete regression of rashes after 7 weeks of treatment.
Рис. 2. Пациентка О., 17 лет, диагноз «Вульгарные акне средней степени тяжести»: *a*, *b* — состояние кожи до лечения; *c* — выраженный регресс воспалительных элементов (на 50%) через 2 недели применения крема; *d–f* — полный регресс высыпаний через 7 недель лечения.

After six weeks from the start of therapy, significant (75%) regression of inflammatory elements on the chest and back was observed (Fig. 3).

CONCLUSIONS

Trifarotene, a novel retinoid with selective activity on skin RAR-γ receptors, has been demonstrated to be effective in treating acne vulgaris on the face and trunk, with a favorable safety profile. It can be used as monotherapy for moderate acne with localized distribution on the face and trunk and as part of combination therapy with oral antibiotics for treating severe forms of the disease, which was confirmed in international multicenter clinical trials to study the efficacy of trifarotene. The innovative pharmacokinetic and pharmacodynamic characteristics of trifarotene offer new avenues for treating acne vulgaris of varying severity and localization.

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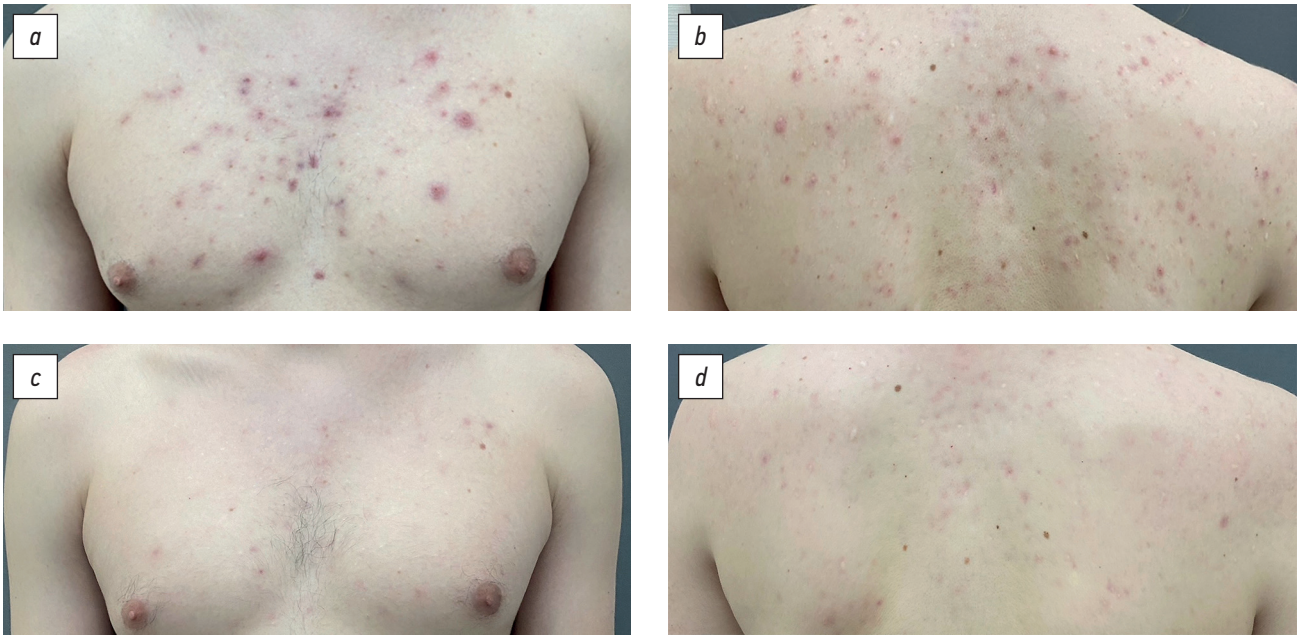

Fig. 3. Patient K., 23 years old, diagnosed with moderately severe vulgar acne: *a*, *b* — skin condition before treatment; *c*, *d* — 75% regression of rashes after 6 weeks of treatment with the cream.
Рис. 3. Пациент К., 23 года, диагноз: «Вульгарные акне среднетяжёлой степени»: *a*, *b* — состояние кожи до лечения; *c*, *d* — регресс высыпаний на 75% после 6 недель лечения кремом.

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ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ

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