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Dermatologic and ophthalmologic collaboration in the management of skin manifestations of ocular rosacea

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This case is presented to (1) improve the efficacy of the identification and differential diagnosis and to avoid mistreatment of the skin manifestations of ocular rosacea exhibiting a clinical appearance of those of other disorders and (2) explore opportunities for building dermatologic and ophthalmologic collaboration in the management of patients with ocular symptoms of rosacea. A 33-year-old female patient was diagnosed with acne vulgaris and seborrhea oleosa by a dermatologist. She received a secondary diagnosis of adrenal hyperandrogenism, iron deficiency anemia and selenium and iodine deficiency. The patient underwent facial skin peeling and was prescribed dermatological treatment. Thereafter, she presented to an ophthalmologist and complained of gritty eyes and blurred vision which she had never before experienced. Ocular manifestations included macerated skin of the eyelid angles, palpebral edema, crusts at the eyelid margin and eyelid telangiectasia. The patient was diagnosed with ocular rosacea, dry eye and keratoconjunctivitis sicca, and obtained the prescribed ophthalmological treatment which resulted in an improvement in her ocular symptoms. Therefore, ocular rosacea should be treated through the cooperative efforts of dermatologists and ophthalmologists based on the constellation of clinical findings and symptoms in a particular case.

Keywords:

rosacea, ocular rosacea,
blepharokeratoconjunctivitis, dermatitis, dry
eye disease, cornea, conjunctiva

Introduction

Rosacea is a chronic inflammatory skin condition with intricate pathogenesis which predominantly affects the central face [1]. Three quarters of patients develop ocular lesions (ocular rosacea), commonly with foreign body sensation, dryness, redness, burning, itching and tearing of the eyes, photophobia and blurry vision [2]. Women are affected more frequently than men. Rosacea most commonly affects those with fair skin and blue eyes, and those of Celtic origin. The prevalence of rosacea varies greatly depending on the population studies, and has been reported to range from less than 1% to 22% [3].

The differential diagnosis of rosacea should include acne, perioral and seborrheic dermatitis, carcinoid syndrome, mastocytosis, discoid lupus erythematosus, systemic lupus erythematosus, lupus pernio, mycosis and inflammatory folliculitis [4].

Perioral (rosacea-like) dermatitis is an eruption of inflammatory papules that predominantly surround the mouth and nasolabial area. Although often said to be a variant of rosacea, perioral dermatitis does not have telangiectasia and does not cause deep dermal lesions. Clinically, perioral dermatitis is distinguished from acne vulgaris by the lack of comedones which are characteristic of acne [5].

Facial manifestations are uncommon in sarcoidosis (e.g., lupus pernio), a systemic disease [6]. Seborrheic der-

matitis has clinical features very similar to rosacea. However, unlike the latter disorder, it is characterized by scaling [7].

Systemic lupus erythematosus (SLE) is a diffuse connective tissue disorder. Unlike rosacea, SLE does not affect the area around the mouth or nasolabial area, and SLE lesions do not exhibit papules and pustules [8].

Granulosis rubra nasi (a chronic disease of eccrine glands), tuberculous lupus (a type of cutaneous tuberculosis), and Haber's syndrome (a rare genodermatosis characterised by an early onset rosacea-like eruption) should be also differentiated from rosacea [9].

Rosacea severity is assessed and graded based on the scales for (a) erythema, (b) telangiectases, (c) papules and/or pustules, (d) facial edema, (e) scaling, (f) presence and manifestations of ocular rosacea, and (g) subjective impressions [10].

Patients with numerous other dermatological disorders may show a clinical picture similar to rosacea, with skin redness, eruption, telangiectases, etc. One should, however, pay attention to specific symptoms to avoid inadequate treatment.

Increasing numbers of patients with dermatological disorders are presenting to esthetic medicine centers, where ocular symptoms of rosacea may be overlooked by

medical cosmetologists. Given the above, we present a case to discuss a potential cooperation between dermatologists and ophthalmologists for the management of patients with ocular manifestations of rosacea.

The purpose was to build dermatologic and ophthalmologic collaboration in the management of skin manifestations of ocular rosacea.

Case description

A 33-year-old female librarian presented to our Eye Disease Department with complaints of labial, nasal mucosal and ocular dryness, blurred vision, hyperemic eyelids and difficulty in morning eye opening. The patient reported a “many years” history of an active skin process. Dermatological manifestations included swollen papules and pustules on her cheeks, nose and central forehead areas, and couperosis and numerous closed comedones and telangiectasia in the presence of erythematous skin. Ocular manifestations included macerated skin of the eyelid angles, palpebral edema, crusts at the eyelid margin and eyelid telangiectasia. On June 17, 2022, the patient presented to a dermatologist with complaints of these symptoms, and was diagnosed with acne vulgaris and seborrhea oleosa. She underwent facial skin peeling treatment and was referred for additional blood examination.

Blood examination was conducted on June 17, 2022, and its results are presented in Table 1.

Blood progesterone, dihydrotestosterone (DHT) and erythrocyte sedimentation rate (EST) were increased sevenfold, threefold and threefold, respectively, compared to the norm, indicating long-term chronic inflammation. In addition, blood ferritin, iodine and selenium levels were

decreased threefold, threefold, and twofold, respectively, compared to the norm. Deficits in selenium and iodine indicated changes in the nervous system in the presence of long-term stress, with skin problems causing the patient to break off her relationship with her partner. Therefore, this situation could become a trigger for the aforementioned abnormalities in the patient’s blood chemistry. Moreover, low blood ferritin, hemoglobin, and color index (CI) indicated that she had anemia as comorbidity.

Thyroid and pelvic ultrasound were performed. The thyroid ultrasound was normal. Pelvic ultrasonography found a paraovarian cyst in 2019, multifollicular ovaries in 2020, and no structural changes in 2021.

The patient received a secondary diagnosis of adrenal hyperandrogenism, iron deficiency anemia and selenium and iodine deficiency.

Prescriptions recommended by the dermatologist included Flutafatm Femina 125 mg once daily after the morning meal for 3 months; Acnetin 8 mg once daily during the afternoon meal for 2 weeks, then twice daily (BID) for 2 weeks and thrice daily (TID) for 3 months; Sorbifer Durules 1 tablet once daily 1.5 hour after meal for 2 weeks, then 1 tablet BID for 3 months; Iosen 1 tablet once daily during the afternoon meal for 6 months; Bioderma Sensibio Gel moussant face wash; Biogena Flogan Krem, OD-BID; YON-KA Lotion PS Dry Skin Toner; face peeling, twice a month; and face cleansing, once a month. In addition, the patient was recommended to have her complete blood cell count (CBC) and blood ferritin and DHT assessed in 3 months. Moreover, she was recommended to have a dermatological follow-up check-up every 3 months

Table 1. Results of blood analyses for the patient with ocular rosacea

Analyzed blood parameters	Measurement unit	Blood analysis results		Reference values
		June 18, 2022	October 16, 2022	
<i>Dehydroepiandrosterone sulphate (DHEAS)</i>	µg/div	88.8	97.4	45-270
<i>Prolactin in follicular phase</i>	ng/ml	22.24	24.34	4-30
Estradiol	pg/ml	47.004	59.033	20-138
Free testosterone	ng/ml	2.19	3.1	0-4
Progesterone	ng/ml	14.78	0.237	0.2-1.5
Ferritin	ng/ml	6.27	34.9	20-120
<i>Thyroid-stimulating hormone (TSH)</i>	µU/ml	3.30	3.74	0.4-4.0
Free thyroxine (T4)	pM/ml	9.93	17.2	6.43-18.02
<i>Thyroid peroxidase antibodies (TPOAbs)</i>	U/ml	4.73	5.28	≤ 35
Iodine	µg/l	92		100-300
Selenium	µg/l	58		74-139
Dihydrotestosterone (DHT)	pg/ml	907	201	24-368
Hemoglobin	g/div	11	12	11.5-16.5
Color index (CI)	unit	0.77	0.85	0.8-1.05
Erythrocyte sedimentation rate (EST)	mm/h	25	5	2-15

for a year with a potential subsequent change in follow-up frequency.

On July 7, 2022, the patient came for a repeat dermatological check-up, and received a Smart 4 Derma carboxytherapy procedure. Since she was found to tolerate her treatment well, she was recommended to continue her therapy and to have an appointment with the dermatologist on August 1, 2022, to have facial skin peeling and cleansing.

At the next dermatological check-up, the patient noted that the prescribed treatment improved the facial skin, with the disappearance of comedones and pustules and marked reduction in erythema. She, however, complained of gritty eyes and blurred vision which she had never before experienced. In addition, the patient began feeling eye discomfort during her morning jogging routine.

She believed that an increase in the level and severity of her ocular symptoms was associated with the rosacea treatment prescribed by the dermatologist.

The dermatologist prescribed her Opatanol eye drops to resolve the ocular complaints. Because the symptoms did not improve significantly with a one-month treatment with these eye drops, the patient presented to our Eye Disease Department with her ocular complaints in September, 2022.

On examination on September 12, 2022, visual acuity (VA) was 0.8 OD and 0.8 OS; refraction, +0.25D sph in OD and +0.25D sph in OS; intraocular pressure (IOP) measured with Maklakoff tonometer, 16.0 mmHg OD and 14.0 mmHg OS, and visual fields were unremarkable. Direct ophthalmoscopy in both eyes (OU) showed a pale pink optic disc with distinct margins and a physiological excavation. In addition, arterio-venous ratio (AVR) was 2/3, the macula was normal and the foveolar reflex was distinct.

Biomicroscopy (Fig. 1-6) findings included hyperemic eyelids with eyelid margin thickening and malformation and numerous telangiectases and yellowish seborrheic crusts along the lid margin. Meibomian glands showed dew-like droplets at the excretory duct openings; the tear meniscus did not cover the Marx line, causing the obstruction of the meibomian gland opening with signs of necrosis. The lower eyelid tarsal conjunctiva was erythematous and exhibited a papillary response and lid-parallel conjunctival folds (LIPCOF) grade 2. Conjunctival injection of the bulbar conjunctiva with punctate fluorescein staining was observed. The cornea showed an epithelial edema, the pannus was more prominent in the superior cornea, fluorescein stained corneal epithelium took on a ground-glass appearance, and there was conjunctival fold staining with fluorescein stain examination. The lens was unremarkable. The pupil was round (with a diameter of 3 mm for both eyes) and reactive.

On September, 12, 2022, the patient was diagnosed with ocular rosacea, dry eye and keratoconjunctivitis sicca.

The prescribed treatment included a ten-session course of eyelid massage; eyelid hygiene procedures with Ble-

phaclean wipes, BID; Theagel, BID; Thealoz® Duo eye drops, 4-6 times a day; and Corner gel, once daily for a week, before a morning jogging routine.

The patient was recommended to have a laboratory check-up and a repeat examination in a month with a potential subsequent change in follow-up frequency.

A repeat blood examination was conducted on October 16, 2022, and its results are presented in Table 1.

Blood progesterone, ferritin, DHT, hemoglobin, and EST levels and CI stabilized in the presence of dermatological treatment. The patient noted that the prescribed treatment resulted in improved ocular symptoms and general quality of life. During a repeat eye examination, the patient reported improved visual comfort and general quality of life.

On examination, palpebral edema substantially improved, mild telangiectasia were still seen at the eyelid margin, the conjunctiva was pale pink, LIPCOF grade 1, and meibomian glands yielded a yellowish liquid secretion after standardized expression (Fig. 7). There was no conjunctival or corneal staining with fluorescein stain examination.

On examination on October 30, 2022, VA was 1.0 OU; refraction, +0.25D sph in OD and +0.25D sph in OS; IOP measured with Maklakoff tonometer, 17.0 mmHg OD and 15.0 mmHg OS, and visual fields were unremarkable.

Direct ophthalmoscopy in both eyes showed a pale pink optic disc with distinct margins and a physiological excavation. In addition, the AVR was 2/3, the macula was normal and the foveolar reflex was distinct.

The patient was recommended to continue treatment with eyelid hygiene procedures with Theagel BID; and instilling Thealoz® Duo eye drops OI or BID or even more often if required.

Discussion

As might be expected, ocular signs and symptoms of rosacea are clinically verified by ophthalmologists significantly more often than by dermatologists. Increased awareness of general ocular symptoms of rosacea among clinical dermatologists will be helpful in the early diagnosis and treatment of the disease [11].

Ocular rosacea is most commonly seen in individuals aged 30-50 years and occurs as a succession of phases characterized by alternating remission and exacerbation [12].

Ocular rosacea may be seen in isolation or occur before the onset of cutaneous features, especially in children. The condition may be unilateral or asymmetrical [13].

The pathophysiology of ocular rosacea appears to have the following elements: inflammation, Demodex mites and ultimate meibomian gland dysfunction. These factors interplay and direct lesion formation. The lesion can present with swelling, erythema, glandular plugging, inflammatory papules and pustules. The chronic presence of either form of inflammation can cause scarring of the cornea or phymatous changes [14].

The clinical features of rosacea include transient or persistent facial erythema, telangiectasias, edema, papules, and pustules. An individual patient may have one or more symptoms. Patients can be asymptomatic or complain of burning, stinging, pain or pruritus [15].

The blepharconjunctivitis is associated with a predominantly evaporative dry eye accompanied by aqueous deficiency, which results in an unstable tear film and a static or slowly progressive cicatrizing conjunctivitis [16, 17].

Sight-threatening keratitis is uncommon. Red facial acne may lead to low self-esteem and anxiety, which can negatively impact psychological and social well-being [18].

The cosmetology market can be roughly divided into two groups, salon and medical cosmetology, and the main difference lies in the practice of medical treatment. Salon cosmetology generally does not involve medical treatment; services provided are mainly facial massage, general skin care, and makeup [19].

Although clinicians treat rosacea and its serious ocular complications rather frequently, available therapeutic options are often ineffective [20].

Medical cosmetology incorporates professional medical knowledge into cosmetology services to provide safe, reliable, and integrated beauty treatments [21].

Medical cosmetology can be defined as “integrated consumer industry” combining professional medical technology and esthetics [22].

The role of the dermatologist in the improvement of patient’s health and health education of patients has been reported. However, recently, there have been contradictory reports with regard to control and quality of diagnostic and treatment healthcare provided to dermatological patients. The rising use of nonphysician clinicians (NPCs) offer the potential to expand dermatologic access, yet may impact health care quality [23].

It is important to differentiate ocular rosacea from other facial dermatoses such as acne vulgaris, pioderma, mycosis, seborrheic dermatitis, atopic dermatitis, periorbital dermatitis, contact dermatitis, steroid dermatitis, dermatomyositis, and lupus [24].

Studies have shown a correlation between rosacea and migraines, and depression. The neurological correlations might underlie the neurovascular dysregulation in rosacea [25].

Conclusion

This case demonstrates the importance of close cooperation between dermatologists and ophthalmologists in managing patients with the symptoms of various disorders in order to avoid mistreatment and consequent adverse events. Of note that ocular rosacea can be manifested in the periorbital region as a combination of three other forms of rosacea: hyperemia and telangiectasias of erythematotelangiectatic rosacea combined with meibomian gland inflammation (appearing like papulopustular rosacea) and

ocular scars (appearing like phymatous rosacea). The skin and tissues around the eyes can be involved in any type of rosacea. Inflammation may result in meibomian gland dysfunction and dry eye symptoms like gritty eyes, burning and blurred vision. Therefore, ocular rosacea should be treated through the cooperative efforts of dermatologists and ophthalmologists based on the constellation of clinical findings and symptoms in a particular case.

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Disclosures

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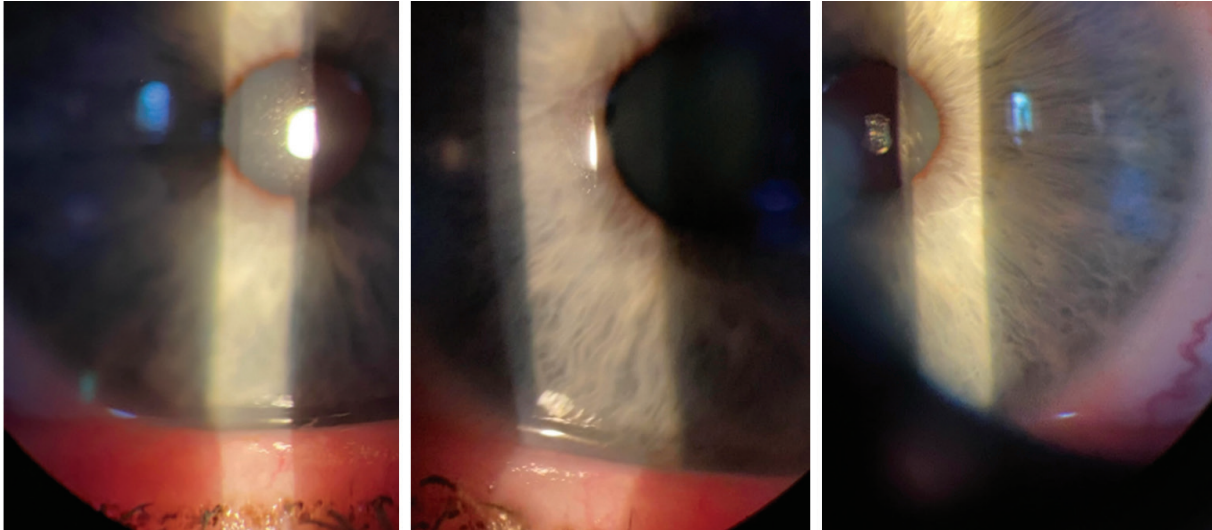


Рис. 1. Біомікроскопія кон'юнктиви, рогівки та маргінального краю повік у прямому світлі хворої з офтальморозацеа.

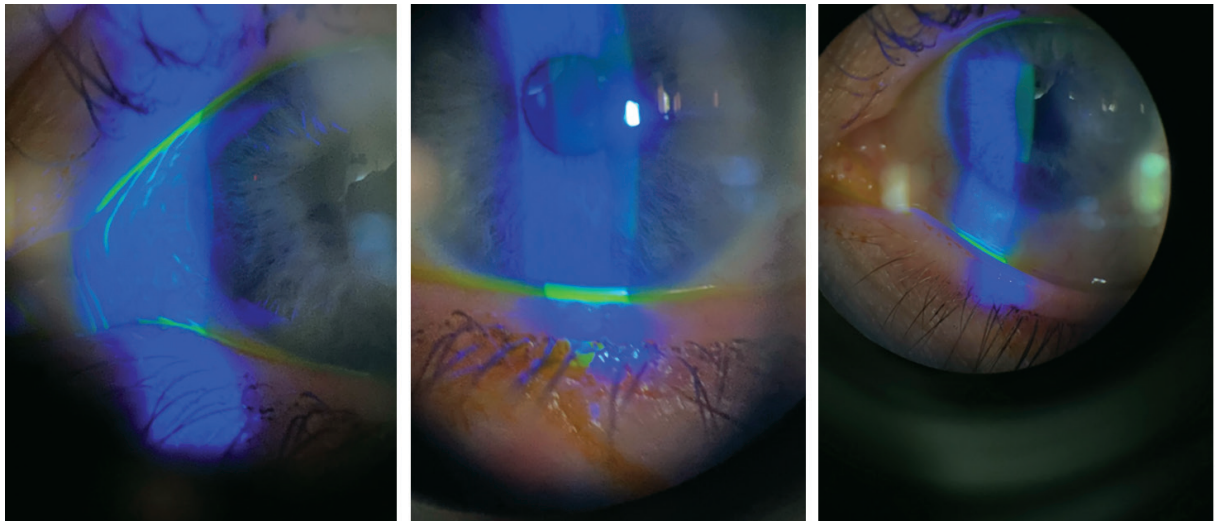


Рис. 2. Біомікроскопія кон'юнктиви, рогівки та маргінального краю повік у синьому кобальтовому світлі після проведення флуоресцеїнового тесту хворої з офтальморозацеа.

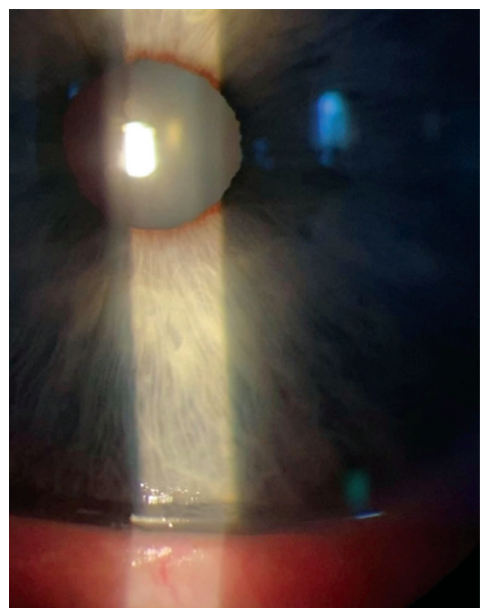


Рис 3. Біомікроскопія кон'юнктиви, рогівки та маргінального краю повік у прямому світлі хворої з офтальморозацеа після проведеного лікування.