

Dalmata, Weronika, Gąbka, Ilona, Dąbrowski, Jan, Szarpak, Julita, Lipiec, Marta, Mielniczek, Katarzyna, Piwoński, Michał. What do we know about rosacea? - pathophysiology and treatment. *Journal of Education, Health and Sport*. 2022;12(12):55-57. eISSN 2391-8306. DOI <http://dx.doi.org/10.12775/JEHS.2022.12.12.008>
<https://apcz.umk.pl/JEHS/article/view/40219>
<https://zenodo.org/record/7313675>

The journal has had 40 points in Ministry of Education and Science of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of December 21, 2021. No. 32343. Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical Culture Sciences (Field of Medical sciences and health sciences); Health Sciences (Field of Medical Sciences and Health Sciences). Punkty Ministerialne z 2019 - aktualny rok 40 punktów. Załącznik do komunikatu Ministra Edukacji i Nauki z dnia 21 grudnia 2021 r. Lp. 32343. Posiada Unikatowy Identyfikator Czasopisma: 201159. Przynależność dyscypliny naukowej: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu).
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The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 26.09.2022. Revised: 29.10.2022. Accepted: 10.11.2022.

What do we know about rosacea? - pathophysiology and treatment

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Abstract

Introduction: rosacea affects approximately 10% of the world's population. It is a recurrent, inflammatory dermatosis that is difficult to deal with despite treatment.

Material and methods: literature review from PubMed databases from 2017-2022.

Conclusions: It is very difficult to find the cause of acne lesions. What is certain is that various factors overlap: genetic, environmental, immunological disorders, intestinal abnormalities, dietary factors. New treatments are constantly being sought. The overall health of the organism is very important in maintaining the proper function of every organ, but also of the skin - as a barrier against rosacea.

Keywords: rosacea, erythema, inflammatory dermatosis, brimonidine, SIBO

INTRODUCTION AND EPIDEMIOLOGY

Acne rosacea is a dermatological condition affecting more than 5% of people worldwide. In the United States alone, more than 16 million people suffer from rosacea. The highest proportion of sufferers is found in countries i.e. Ireland, Scotland reaching up to 18% of the population [1, 2, 3, 4]. The incidence of rosacea increases with age [5]. It usually presents at a mature age, with the first symptoms usually occurring between 30 and 60 years of age. The disease most commonly affects women, but a more severe course affects men. It most commonly affects people with phototype I or II according to Fitzpatrick (residents of northern and western Europe and North America) [2, 3, 4]. The course of the disease is characterised by a high recurrence rate [5].

PATHOPHYSIOLOGY

Skin with rosacea is characterised by an abnormal inflammatory (perivascular or pilose infiltrates), vascular (dilatation), lymphatic (extension), glandular (hyperplasia) and fibrotic process, reflecting the multifactorial process of the skin disease. At the same time, this heterogeneous histological picture indicates an unclear pathophysiological origin of rosacea [1, 4, 5].

Acne rosacea is a chronic inflammatory dermatosis [1, 6, 7]. It progresses with periods of exacerbation and remission [2]. The disease is characterised by telangiectasias and transient or persistent erythema, papules, pustules, microabscesses [1, 8]. The lesions mainly affect the central part of the face: cheeks, nose, chin, forehead and eyelids [1, 3, 4, 6]. The pathomechanism of the disease is complex and multifactorial. There are several hypotheses on the subject: vascular disorders, genetic factors, immunological disorders, endocrine disorders, infectious factors, dietary factors, the influence of other diseases [2, 6, 9]. The histological picture is characterised by perivascular infiltrates, glandular hyperplasia, dilatation of the vascular system, and dilatation of lymphatic vessels [1].

As the disease affects the skin of the face, it can have a negative impact on the patient's quality of life and well-being, hence the importance of effective treatment [1, 6].

DIAGNOSTIC CRITERIA

Diagnostic criteria enable the diagnosis of the disease. In the case of rosacea, they are divided into primary and secondary criteria.

Primary criteria include:

- paroxysmal redness of the facial skin lasting about 10-15 minutes;
- persistent erythema;
- papules, pustules and inflammatory papules.
- microedema.

Secondary criteria include subjective symptoms such as:

- stinging;
- burning;
- pruritus;
- dryness of the skin [1, 3, 7, 8].

CLASSIFICATION

The most commonly used classification is: subtype I or erythematotelangiectatic rosacea (ETR), subtype II-papulopustular rosacea (PPR), subtype III (phymatous rosacea) and subtype IV (ocular rosacea) [4].

The second classification refers to the phenotype of rosacea: transient and persistent erythema, telangiectasias, inflammatory papules or pustules and phyma [4, , 10].

TREATMENT

The first rule of treatment for patients with rosacea is to use non-irritating skin care, apply sunscreen with at least 30+ SPF protection, apply moisturiser, and gently cleanse the entire face [1, 4].

Therapeutic regimens usually include topical treatment and systemic treatment or physical therapy. For the treatment of erythema occurring in acne, brimonidine (a beta2-adrenergic agonist) and oxymetazoline hydrochloride 1% (an alpha1A-adrenergic receptor agonist). Laser therapy may also be used. As for telangiectasias, intravitreal injections of aethoxysklerol (0.5%-1%), intense pulsed light (IPL) therapy or physical laser therapy are used [1, 4-10]. Since 2014, Ivermectin cream 1%-an acaricidal agent that acts on *Demodex folliculorum* and *brevis*-has been used for treatment. It shows efficacy after 16 weeks of treatment [10].

For papulopustular rosacea, topical or systemic antibiotics and topical or systemic retinoids are used [4].

PROFILACTION

To prevent rosacea recurrence, alcoholic beverages and spicy foods should be excluded from the diet. In addition, exposure to cold and heat and exposure of the skin to the sun should be limited [5].

A HEALTHY BODY AND ROSACEA

There are proven factors that increase the incidence of rosacea. These include, for example, obesity, *Helicobacter pylori* infection (the incidence in rosacea patients is 48.9% compared to 26.7% in controls), inflammatory bowel disease. Metabolic, psychiatric and neurological disorders and certain cancers also show an association with the incidence of rosacea. In addition, smoking is among the factors that increase incidence [3, 5, 11]. *Demodex* mite density has been shown to be 5.7 times increased in the skin of people with rosacea [3, 4, 11, 12].

Gut health also affects skin condition. In a properly functioning gut, the gut microbiome prevents the transmission of harmful substances. Breach of the mucosal surface, as a result of autoimmune disease, but also as a result of a change in the composition of the gut microbiome, can cause harmful substances to enter the bloodstream and cause adverse effects including acne lesions. Additionally, small intestinal bacterial overgrowth (SIBO) is found to be 2-20 times higher in patients with rosacea compared to controls [11].

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