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DERMATOLOGICAL INDICES IN DEMODICOSIS

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Demodicosis (also known as demodex folliculorum or demodicidosis) is a disease caused by mites of the Demodex genus, which are associated with hair follicles and sebaceous glands. It is characterized by the presence of grouped papules, pustules, erythema, and pityriasis-like scaling. The eruptions are often unilateral and typically localized on the eyelids, eyelashes, eyebrows, cheeks, and nasal regions in an asymmetric distribution [1].

There are 10 species of Demodex mites considered pathogenic for humans and animals. Two species parasitize the human body: Demodex folliculorum (affecting the hair follicles of the eyelashes and eyebrows) and Demodex brevis (affecting the sebaceous glands in the nasolabial folds and alae nasi).

Demodex mites are widespread in all races and geographic regions. Parasitism on the human body often occurs without clinical symptoms. On average, 30–55% of individuals are carriers of sebaceous mites. The prevalence of demodicosis increases with age, reaching nearly 100% carriage in elderly individuals. The participation of Demodex folliculorum in the pathogenesis of the disease becomes clinically significant when its density exceeds 5 mites per cm^2 of skin [1].

Sebaceous mites feed on epithelial cells of the walls of sebaceous glands and hair follicles. The life cycle of the mite consists of five stages: egg, larva, protonymph (first-stage nymph), deutonymph (second-stage nymph), and adult (male or female). After fertilization, the female mite migrates deep into the follicle and lays eggs. The larvae hatch, feed, and molt into protonymphs. These, in turn, feed and migrate along the flow of sebaceous secretions toward the follicular opening, where they molt into deutonymphs. The deutonymphs rise to the skin surface, migrate between follicles for 12–36 hours, and then penetrate a follicle to mature into adult females. The duration of each developmental stage ranges from 36 to 120 hours, with the entire life cycle of the female mite lasting about 15 days [1].

Evaluation of the severity of Demodex infestation in patients with demodicosis

Russian researchers O.E. Akilov and Yu.S. Butov developed a method for assessing the degree of mite invasion in patients with demodicosis [2–5]. The authors proposed two diagnostic coefficients: the Total Mite Count (TMC) and the Mite Invasion Severity Index (MISI).

These methods make it possible to quantitatively assess both the lesion area and the intensity of the pathological process, ensuring objectivity of the obtained data and allowing dynamic evaluation of treatment effectiveness in patients with demodicosis. Counting mites at different stages of their life cycle also provides a basis for predicting the severity of tissue damage [1].

Total Mite Count (TMC)

Parameters: Density of mites per 1 cm^2, and the area of the lesion in cm^2.

Total Mite Count (TMC) = (mite density) × (lesion area)

Mite density can vary in different regions; therefore, a more accurate calculation is performed as follows:

TMC =(mite density in mildly affected areas × area of mildly affected region)+(mite density in moderately affected areas × area of moderately affected region)+(mite density in severely affected areas × area of severely affected region).

Mite Invasion Severity Index (MISI)

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The Mite Invasion Severity Index (MISI) is used to assess the lesion area and the severity of the pathological process, taking into account the stages of the life cycle of *Demodex* mites.

Six parameters are considered:

1. Number of eggs per cm^2
2. Number of larvae per cm^2
3. Number of protonymphs per cm^2
4. Number of deutonymphs per cm^2
5. Number of adult mites per cm^2
6. Lesion area in percentages (the total surface area of the face is considered 100%).

The formula is as follows:

MISI=[(5×number of eggs)+(4×number of larvae)+(3×number of protonymphs)+(2×number of deutonymphs)+(1×number of adult mites)×percentage of facial lesion area]/ 2×5

A differential diagnostic table has been proposed to distinguish between carriers of *Demodex* parasites and pathological mite infestation of the skin based on the severity assessment [2].

When diagnosing demodicosis, the clinical picture is considered primary. The presence of a high mite density (>5 mites per cm^2) in the absence of a rash should be regarded as a variant of asymptomatic carriage [2].

Table 1.

Assessment of the Degree of Mite Infestation in Patients with Demodicosis

Indicators	**Density**	**TMC**	**MISI**
Healthy Carrier State	per 1 sm^2 < 5	< 100	0-9,9
Pathological Mite Infestation	per 1 sm^2 > 5	> 100	> 10,0
Mild Severity		100-249	10,0-19,9
Moderate Severity		250-749	20,0-29,9
Severe Severity		> 750	> 30,0

Research Objective:

To determine the indicators of Total Mite Count (TMC) and Mite Invasion Severity Index (MISI) in patients with demodicosis within the Andijan region.

Materials and Methods of the Study

Our study included 52 patients (13 men and 39 women) with a mean age of 46.3 years. The diagnosis of demodicosis was established after laboratory examinations confirmed the presence of Demodex mites in samples taken from the lesion sites.

In all patients, the Total Mite Count (TMC) and the Mite Invasion Severity Index (MISI) were assessed, as well as the Dermatology Life Quality Index (DLQI), both before and after the course of complex therapy.

Results of the Study

In all patients with demodicosis, elevated Total Mite Count (TMC), Mite Invasion Severity Index (MISI), and Dermatology Life Quality Index (DLQI) values were recorded before treatment.

Among 20 patients with mild disease severity, the TMC was 203.80 ± 0.12, MISI was 13.20 ± 0.34, and DLQI was 20.1 ± 1.2 points.

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In 26 patients with moderate demodicosis, TMC was 255.72 ± 0.02, MISI was 22.42 ± 0.04, and DLQI was 24.2 ± 0.12 points.
In 5 patients with severe disease, TMC was 253.36 ± 0.02, MISI was 32.45 ± 0.04, and DLQI was 27.2 ± 0.12 points.
After completing complex therapy, all three indicators showed a significant decrease.
In the 20 patients with mild severity, post-treatment TMC was 33.10 ± 0.11, MISI was 7.22 ± 0.11, and DLQI was 10.1 ± 0.2 points.
In 26 patients with moderate disease, post-treatment TMC was 154.22 ± 0.32, MISI was 12.49 ± 0.24, and DLQI was 14.2 ± 0.22 points.
Finally, in 5 patients with severe demodicosis, post-treatment TMC was 183.06 ± 0.33, MISI was 22.15 ± 0.33, and DLQI was 14.2 ± 0.62 points.

Conclusion

In patients with demodicosis, elevated values of the Total Mite Count (TMC), Mite Invasion Severity Index (MISI), and Dermatology Life Quality Index (DLQI) were observed before therapy, with a notable decrease in these indicators following complex treatment.
The TMC, MISI, and DLQI are reliable tools for confirming the diagnosis of active demodicosis, for monitoring the dynamics of the disease during therapy, and for predicting treatment outcomes.

References

1. Adaskevich V.P. *Diagnostic Indices in Dermatology.* Moscow: Panfilov Publishing House; BINOM. Knowledge Laboratory, 2014. – 352 p.: ill.
2. Butov Yu.S., Akilov O.E. Clinical features and issues of classification of skin demodicosis. *Russian Journal of Skin and Venereal Diseases.* 2003; (2): 53–58.
3. Butov Yu.S., Akilov O.E. Rationale for a new approach to the classification of skin demodicosis. *Bulletin of Postgraduate Medical Education.* 2002; (1): 87–88.
4. Butov Yu.S., Akilov O.E. Factors of successful colonization by *Demodex* spp. mites. *Bulletin of Postgraduate Medical Education.* 2002; (1): 87.
5. Akilov O.E., Butov Y.S. et al. A clinic-pathological approach to the classification of human demodicosis. Ein klinisch-pathologischer Ansatz zur Klassifikation der humanen Demodikose. JDDF 2005; 3: 607-614.

ДЕРМАТОЛОГИЧЕСКИЕ ИНДЕКСЫ ПРИ ДЕМОДЕКОЗЕ

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В статье приведены сведения о дерматологических индексах, применяемых при демодекозе, изучены показатели «общий клещевой счёт» (ОКС) и «индекс тяжести клещевой инвазии (ИТКИ), дерматологические индексы качества жизни (ДИКЖ) у 52 больных до и после комплексного лечения. Отмечено, что показатели ОКС, ИТКИ и ДИКЖ были высокими до лечения и снижались после комплексной терапии.
Ключевые слова: демодекоз, терапия, общий клещевой счет, ОКС, индекс тяжести клещевой инвазии, ИТКИ, дерматологический индекс качества жизни, ДИКЖ.

DERMATOLOGICAL INDEX IN DEMODECOSIS

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The article provides information about the dermatological indices used in the treatment of demodicosis, studied the indicators "total tick score" (TTS) and "tick-borne invasion severity index (TISI), dermatological quality of life indices (DQLI) in 52 patients before and after

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complex treatment. It was noted that the indicators of TTS, TISI and DQLI were high before treatment and decreased after complex therapy.

Key words: demodicosis, therapy, total tick count, TTS, tick-borne invasion severity index, TISI, dermatological quality of life index, DQLI.