

## Types of character accentuation in patients with recurrent herpetic keratitis

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*Herpetic infection is the most common cause of inflammatory disease in the cornea in European countries and complicated forms of herpetic infection are the most frequent indication for corneal transplantation. Factors which control the balance between acute and latent phases in recurrent herpetic infection are not sufficiently clear. At present, psychoemotional maladjustment is also considered to be a potential co-factor for developing the infectious process.*

**Purpose.** To study psychological features in individuals with recurrent herpetic keratitis (HK).

**Material and Methods.** The study involved 27 patients with recurrent stromal herpetic keratitis, aged from 23 to 50. K. Leonhard–H. Shmishek's questionnaire was used to study psychological features in the individuals with HK; the data obtained were exacted during the diagnostic interview and based on patients' self-evaluation reports. The questionnaire diagnoses 10 types of accentuation: hyperthymic, stuck, emotive, anxious (fearful) type, pedantic, cyclothymic, disthymic, excitable, demonstrative, and exalted. Total scores of 8-12 points are within the normal range; those exceeding 8-12 points are indicative of accentuation.

**Results.** More frequently we revealed accentuations as follows: emotive (92.5%), stuck (81%), hyperthymic (62.9%), demonstrative and pedantic (no 59,2%), cyclothymic (56%). Exalted accentuation with a high degree of expression was noted in 44.4% of the patients. 81.5% of the patients with recurrent HK had a combination of two and more accentuations, among which the emotive accentuation was dominant.

**Conclusion.** Combinations of two or more types of character accentuation were found in 81.4% of the patients with recurrent HK and emotive accentuation was a dominant type of accentuated character (92.5%). Of a prevailing value in the psychological structure of the studied persons are accentuations which general characteristics are high lability of emotional reactions, their depth and duration, impressibility, vulnerability, empathy, and susceptibility. The study performed is not exhaustive; it is important to study also a role of the disease in developing maladaptive forms of psychological response.

### Keywords:

ophthalmic herpes, accentuation of character

### Introduction

Herpetic infection is the most common cause of inflammatory disease in the cornea in European countries and complicated forms of herpetic infection are the most frequent indication for corneal transplantation. High incidence rates of herpetic infection and a severe course of recurrent ophthalmic herpes make this issue of great medical and social importance. Factors which control the balance between acute and latent phases in recurrent herpetic infection are not sufficiently clear. At present, psychoemotional maladjustment is also considered to be a potential co-factor for developing an infectious process [1]. In recent years, incidence rates and psychosomatic

disorders and their impact on society have been increasing. According to an outstanding German professor, Alexander Mitscherlich, a physician must have psychotherapeutic knowledge for at least a half of his clients. Knowing basic psychosomatic care is required for an ophthalmologist to improve medical service and care; in this respect, the German Medical Association believes that training in basic psychosomatic care is obligatory in the specialist training of ophthalmologists [2].

Modern medicine is mostly thought of as medicine of diseases: a disease is considered independently of the patient's psychological traits. However, it is impossible to ignore the fact that 60-80% of the whole pathology is conditioned by psychological traits, which becomes the main concern due to a frequency, chronic course, growth, and prevalence of the disease [3-5].

Any physical disease causes psychological changes and, vice versa, a pathological psychoemotional status of a patient precipitates disease. Psycho-immunological and psycho-endocrinological studies have proven the effect of mental health on the immune system [6].

Among many factors of a disease, a stress factor is of special significance. Mental stress activates the sympathetic nervous system and, thus, increases levels of the system and local adrenaline, cortisol, and endothelin. In particular, an increased plasma level of endothelin, which has repeatedly been shown in glaucoma patients, leads to stimulation of endothelin receptors in the trabecular network [7].

Autogenic training, hypnosis, and music therapy have a significant effect on intraocular perfusion fluid and, generally, on the psychological constellation of patients suffering from glaucoma. Since all these adjuvant therapeutic options are economically efficient, available almost everywhere and anytime, and devoid of any known side effect, they can be useful in a complex treatment for glaucoma. Periodic examinations by an ophthalmologist, herewith, are obligatory [8, 9].

A retrospective questionnaire-based analysis of mental disorders in patients with dry eye syndrome resistant to therapy has shown that mental disorders were found in 52.7% of the patients: anxiety diagnoses in 21.8%, depression in 15.3%, mixed forms in 14.5%, vegetative dystonia in 25.4%. Only 22.7 % of the patients were not diagnosed with mental disorders. The authors showed that patients with dry eye syndrome often suffer from anxiety and depression; mental stress leads to disturbance of tear function via nerve mechanisms.

Knowledge of the psychological problems enables the psychological support of the patients and, thus, improved treatment for dry eye syndrome [10, 11].

64 patients with Graves' disease-associated exophthalmos were interviewed using a psychosocial questionnaire on social-psychological disease incidence rates, a quality of life, and stressful life situations [12]. Thus, 60% of the patients stated that they had had a loss experience (job, parents, children, or partner) for several months before the onset of the disease. Authors concluded that Graves' disease as an auto-aggressive disease was triggered significantly by psychosocial factors. In such a case, interdisciplinary therapy, which should also include medical psychotherapy, is required. About 75% of patients with different uveitis believe that the disease was caused by emotional and mental stress [13, 14].

Some authors have described the impact of the psycho-emotional state on refractogenesis of a child's eye and myopia development [15]. A relationship has been revealed between the psycho-emotional state of a patient and disease progression; methods of psychocorrection have been developed [16, 17].

One of the keynote concepts in the world psychology is a term of "internal picture of the disease" (IPD) introduced by Alexander Luria in 1929 [18]. Psychologically, IPD can be considered as an element of self-consciousness and as a complex of patient's ideas about his disease, experiences, pathological changes, peculiarly reflected in the psyche of a patient, and human conditions which determine the nature of disease and circumstances under which the disease occurs [19, 20]. Studying the types of attitude towards the disease and personality traits of patients with acquired eye diseases made it possible (i) to form the structure of IPD in such patients, (ii) to determine the blocks of adaptive and maladaptive IPD types, and (iii) to reveal age-related differences in IPD types and social and personal characteristics of the patients with acquired eye diseases [5].

Mental stress, heat stimulation, ultraviolet ray and immune suppression are among the reactivating factors of herpes simplex virus (HSV), which can lead to epithelial and stromal herpetic keratitis and other complications [21]. In the scientific literature, there are data on a relationship of herpetic viral infection of an eye with stressful factors; in addition, there are specific references that the course of infectious disease can have neurotic, anxious, and depressive manifestations [22, 23]. A meta-analysis of 11 articles on a relationship between a psychosocial state and HSV-associated pathology has revealed a robust relationship between psychosocial stress and symptomatic HSV recurrence. Psychological distress was more strongly associated with symptomatic HSV recurrence than stress stimuli per se. This correlation requires further research clinical trials to evaluate the efficacy of interventions reducing stress on HSV recurrence [24].

We have revealed a correlation between the character of recurrent herpetic keratitis (HK) and increased sympathetic tone: in process, which recurs frequently, the impact of the sympathetic component of vegetative nervous regulation is increased by 27.2% as compared to the infrequently recurring process. There is a direct correlation between the impact of the sympathetic vasomotor center (SVC) and blood volume which increases by 23% in highly activated SVC as compared to low activity SVC. In frequently recurring HK, the impact of humoral regulation decreases by 22% while sympathetic regulation increases by 50% as compared to infrequently recurring HK. Regulation stress index is a characteristic of the adaptive capability of the vegetative nervous system and corresponds to the norm in the infrequently recurring HK and frequently recurring HK in remission. In a recurrence of frequently recurring HK and keratouveitis, stress index is 1.5-2.0-fold increased.

The studies have demonstrated a significant difference in the nervous activity between different courses of recurrent HK. In addition, there are psycho-emotional disorders in such patients. The data obtained testify to the need for psychological support for patients with ophthalmic herpes and further research in this field [25, 26].

Thus, we are faced with the necessity to study psychological characteristics of the patients with recurrent herpetic keratitis. To study individual psychological characteristics there are different techniques, among which the most popular is the Leonhard questionnaire for character accentuation.

The choice in favor of this questionnaire can be justified as follows. The test reveals a particular direction of a character and, at the same time, takes into account the features of a human emotional sphere and how a person reacts in exquisite situations. Emotions are known to participate in neurohumoral regulation as its involuntary component. Such characteristics of emotional response as depth, intensity, duration, and modality have a direct effect on the size of physiological changes. Generalized impact of emotions on the body can be explained by the fact that physiological mechanisms of emotions are tightly associated with the activity of subcortical centers of congenital reflexes and the occurrence of any emotion rebuilds the current activity of the organism (E.P. Iliin, 2020).

Accentuations are features of character within the limits of clinical norms, in which certain traits of character are excessively strengthened; this leads to selective vulnerability to a certain kind of psychogenic influence with good resistance to others (K. Leonhard, 1981). A feature or a trait itself, lying in the core of any type of accentuation, is neither "bad" nor "good", in the strict sense. Accentuated character differs from the normal one only by an expression degree of certain features, in other words, certain personality traits can have such a special severity or "pointedness" that becomes pathological. Extremely expressed traits are indicative of psychopathy.

Accentuations can be combined between each other on the principle of complementarity, smoothing the vulnerable areas of or strengthening each other. It should be underlined that each accentuation has own specific vulnerable area, manifestations of which can be seen at psychophysiological, personal and social levels.

**The purpose** of the present paper was to study psychological features in individuals with recurrent herpetic keratitis (HK).

### Material and Methods

The study involved 27 patients with recurrent stromal herpetic keratitis, aged from 23 to 50. K. Leonhard-H. Shmishek's questionnaire was used to study psychological features in the individuals with herpetic keratitis; the data obtained were exacted during the diagnostic interview and based on patients' self-evaluation reports. The questionnaire diagnoses 10 types of accentuation: hyperthymic, stuck, emotive, anxious (fearful), pedantic,

cyclothymic, dysthymic, excitable, demonstrative, and exalted. Total scores of 8-12 points were considered within the normal range; those exceeding 8-12 points were indicative of accentuation; the total score of 20-24 points testified to a high degree of character accentuation.

### Results and Discussion

The study was based on the hypothesis that there is a certain association between psychological features of personality and the frequency of herpetic eye disease.

The study involved twenty-seven patients with recurrent herpetic keratitis. K. Leonhard-H. Shmishek's questionnaire data are demonstrated in Table 1.

The following facts stand out particularly:

Most frequently revealed types of accentuation, in decreasing order, were:

- emotive (92.5 %),
- stuck (81 %),
- hyperthymic (62.9%),
- demonstrative and pedantic (59.2 % each),
- cyclothymic (56%).

Twenty-two patients (81.2%) with recurrent HK were observed a combination of two and more accentuations, among which emotive accentuation was of a dominant value (Table 1). Exaltation as character accentuation was revealed in 44.4% of the patients and corresponded to a high degree of expression based on K. Leonhard-H. Shmishek's questionnaire (Table 1).

Emotive type of personality (incidence, 92.5%; K. Leonhard-H. Shmishek's questionnaire score,  $18.6 \pm 0.7$ , a moderate degree of expression) is characterized by excessive sensitivity and openness to any emotional impact. These people are very impressionable, vulnerable, soft-hearted, tearfulness, and altruistic; their vulnerable area includes low sensitivity, ready access of outer impressions to deep psychic structure, humanistic personality orientation, and suspiciousness. Major dynamic characteristics of emotivity are lability, emotional profoundness, and emotional responsiveness even to weak outer stimulus.

Stressful situations for emotive people are a violation of ethical principles by other people, rudeness and hardheartedness towards them, the absence of warm emotional connections, and illness among close relatives; herewith, they tend to carry their resentment deep inside. Response to stress can be healthy (coping and self-regulation) and inadapative in the form of "flight into illness". Steady-state stress can cause depression and various somatic reactions.

We can't say that emotive accentuation has an independent premorbid value but it, in a significant degree, conditions a psychophysiological background which is conducive to somatic diseases; it is known that when children, these people often suffer from tonsillitis, cold, pneumonia, rheumatism, which was also evidenced by the patients in our study. In 55% of the patients, emotive accentuation was of high rates and three persons had extreme values. Most patients reported that they,

by the disease onset, had already had sub-depression or depression, a condition when vitality is realized by will alone. Mean Leonhard–Shmishek's questionnaire score was  $18.6 \pm 0.7$  in the patients with emotive accentuation.

It should be noted that most HK patients had combinations of different accentuations. The present paper did not have a purpose to analyze all possible combination variations but only to describe attributive characteristics of accentuated types which are most significant in an expression degree and their possible inter-influence. High vulnerability of emotively accentuated personality contributes to enhancement and enrichment of emotional influence of another accentuation in combination.

Stuck accentuation was revealed in 81% of the patients (Table 1) mainly with moderate values (Leonhard–Shmishek's questionnaire score,  $15.9 \pm 0.4$ ).

Personality with stuck accentuation tends to carry strong feelings for a long time (especially, resentment, anger, fear) and to constantly return to the same feelings with the same strength and intensity. Emotions of persons with stuck accentuation have a cumulative effect. The main dynamic characteristics of emotions in this type are emotional intensity and continuance, rigidity. Since the trace of experienced feelings can be kept any length of time, there is a vicious loop, in which rigidity and continuance serve as factors of mutual reinforcement. Among maladaptive features are piqued vanity, resentfulness, and suspiciousness. Stressful situations can uncertainty, violation of developed plans, injustices, and violation of human dignity.

A reaction to stress can be of two kinds: an adaptive reaction appears in striving to have a sense of purpose in any business he undertakes almost independently on other people; an inadaptive reaction appears in hostility, aggression, abundance of caution, withdrawal, and, in extreme situations, paranoid manifestations (which were not detected in our study).

In the present study, 15 persons had a combination of emotive and stuck accentuations. Their mutual influence appears in the fact that, in most patients, selfish tendencies of stuck character are softened by the selflessness of emotive accentuation; it seems, however, that resentfulness and vulnerability grow.

People with hyperthymic accentuation of character are rather noticeable among others: they are characterized by extremely talkativeness, a good mood, thirst for activity and mental mobility. Their emotions are simple, natural, and clear. The incidence of hyperthymic accentuation in our study was 62.9% with the mean Leonhard–Shmishek's questionnaire score of  $17.6 \pm 0.7$ , which corresponded to a moderate degree of expression.

The most important dynamic characteristics are high emotional lability, expressiveness, impulsiveness. Among stressful situation are monotonous environment, monotonous work, need for a thorough performance of work or a thorough analysis of information, and age-related changes. Non-adaptive reactions are aggressiveness,

impulsive behavior, fantasy formation. Extreme values of accentuation testify to a condition laced with irritable hypomania (in our study, it was revealed in two patients). In the scientific literature, there are data on the association between hypomania and hyperthyroidism [5].

These people have high energy potential and if they are not engaged adequately, their outstanding features transform easily into negative ones as irritability, angeriness, useless fussiness. Healthy behavior in stress situations includes a search for creative solutions, actualization of missed opportunities.

The following types of accentuation, based on the incidence and a degree of expression, are pedantic and demonstrative (incidence, 59%; mean Leonhard–Shmishek's questionnaire score,  $18.1 \pm 0.7$  and  $16.8 \pm 0.5$ , respectively). Moreover, 10 patients had both these accentuations, and 6 patients had either of them with comparative values. We underline this fact because K. Leonhard, when describing character accentuations, believed that pedantic and demonstrative accentuations are incongruous types within one personality since they are opposed to one another in the same sphere of reactions.

The demonstrative (hysteroid) type is characterized by the abnormal capability to repress any anxiety-provoking emotions and feelings and difficulties with inhibition. Turbulent but superficial emotional reactions, high plasticity, and shifting of psychical processes are common for hysteroid personality. People with demonstrative accentuation are artistic, prone to fantasizing; self-esteem as well as relation to other people are far from objectiveness and often can be emancipated from the facts. They are also characterized by theatrical manners, nervousness, irritability, and behavioral flexibility. They are driven by a thirst for being in the spotlight whatever it takes, which makes them strive to ingenuity. Often, with the purpose to draw someone's attention and concern, they arrogate to have diseases which do not exist in actual life and reach certain credibility in it. They get into the role of a sick person so much that can mislead a doctor and only special examination can reveal the absence of pathology.

Stressful situations can be a monotonous activity, a need to perform longtime and thorough work, possibility to be caught cheating, being hypocrite, or manipulating.

A typical solution for conflict situation is a frequent change of activity, conversion reactions (reactions which are induced by internal psychological conflict and subconsciously transformed into neurologic and somatic symptoms), and easily appearing aggressive flashes.

An entirely different picture is observed in pedantic accentuation personality (a person suffered from anankastia) (incidence, 59%; Leonhard–Shmishek's questionnaire score,  $16.8 \pm 0.5$ ). These people are vulnerable, always doubtful, conscionable, suspicious, prone to thoroughness, cautious, and vexatious. The anxiety of anankastic personality is caused by their perfectionism, doubts and self-uncertainty, striving to

meet their high standards, suspiciousness, and a drive to analyzing their behavior. Switch to new circumstances, a need to make decisions, especially difficult ones, and proneness to self-accusation are experienced as stressful situations and go along with increased suspiciousness and anxiety. Typical reactions in stressful situations are escapism, rationalization as the major defence mechanism and, less frequently, "flight into illness".

Dynamic characteristics are associated with the predominance of passive defensive reflexes and marked by certain inertness and, generally, somewhat decreased energy potential. Unfavorable situations can be a trigger for phobia, hypochondria, obsessive-compulsive disorder (manifested in compulsive thoughts and actions), which, in theory, really contradict hysteric disinhibition.

During psychotherapeutic sessions and under direct psychotherapeutic observation, the patients with a combination of these two accentuations gave the impression that reactions of some patients occurred from different mental centers. These can be competitive structures, inherited from each patient and co-existing in the psyche of one person relatively autonomously. It is possible that we deal with those cases of combined accentuated features when there is mutual influence and obligatory and facultative competitive features have not become clear yet.

Some patients with combined pedantic and demonstrative accentuated personality have external reactivity flattening. Asthenized reactions of a pedant personality are likely compensated by increased energy potential of a demonstrative personality.

A cyclothymic type of accentuation (incidence, 56.0%; Leonhard-Shmishchek's questionnaire score, 18.5±0.9) is characterized by swings of hyperthymic and dysthymic conditions, excitement/depression changes. Dysthymia can be described as a state of depression accompanied by various somatic disorders. In a period of depression, distinct are passivity in actions, sluggish mentality, and retardation. However, of great importance is a frequent change of periods rather than dysthymia itself. A frequent change of moods destroy the vascular balance and, according to Gannushkin P.B. (1964), can lead to early atherosclerosis, narrow-mindedness, and dementia. People with cyclothymic accentuation of character are prone to depressions.

Sometimes cyclothymic personality can simultaneously have opposite conditions, a mixture of hypomanic and melancholic components and it is difficult to say exactly which of physiological changes prevail in some patients in externally attractive conditions like depression with a touch of humor or joy with a touch of sadness.

Also, attention should be given to manifestations of exalted accentuation, the temperament of anxiety and happiness (incidence, 44.4%; Leonhard-Shmishchek's questionnaire score, 21.0±0.5). At first glimpse, exalted personality seems to be a naive and suggestible person with susceptibility to momentary moods and an unmotivated go

to extremes. However, mood swings have an independent meaning and are associated with peculiarly high sensibility and lability of the nervous system. Alongside this, the most important dynamic characteristics are high rates of reaction growth, reaction intensity, and rates of psychical processes.

Stressful situations are those demanding long-time concentration and efforts, responsibility, public indications of physical or other disabilities, and maladaptation to the prosaic side of life.

Most typical behavior in stressful situations can include avoidance of difficulties, which is associated with low endurance, proneness to self-accusation, a flight into illness, panic reactions associated with impaired self-control. Exalted persons often give an impression of people with run-down energy resource. Despite a significant similarity with emotive accentuation, exalted feelings are of more total and generalized character and accompanying neurohumoral changes are much more expressed. In this regard, it is not unthinkable that exaltation as a personality trait can be of independent value in acquiring some diseases.

In our study, anxious (fearful) type of character accentuation was less expressed (incidence, 25.9%; Leonhard-Shmishchek's questionnaire score, 15.0±0.5). According to K. Leonhard, psychological content of this type is conditioned more by susceptibility to fear and individual's disability to conquer this feeling rather than by anxiety, which is perceived as a socially unattractive feature.

In psychology, anxiety as a personality trait is thought of as a tendency to have a permanent feeling of worry which is manifested as an uncertain but stable diffuse feeling of neurotic tension. Despite the similarity of dynamic characteristics of anxiety and fear, a feeling of fear is basic and grounded in genetically predetermined physiologic components while anxiety is more towards a lifetime formation which is socially induced on a certain typological basis and associated with a real or phantom threat to individual's self-esteem. An issue on the correlation of anxiety as a personality trait with other psychological traits in patients with HK requires further studying.

To conclude the intermediate phase of studying the psychological features of the patients with herpetic keratitis, it should be noted that general characteristics of most patients were a high level of emotional lability, sensitivity, vulnerability, empathy, hyperirritability, and, in long-lasting unfavorable conditions, differently expressed depression. The latter is excluded for people with demonstrative accentuation of character, who are not depression-prone but whose behavior looks threatening when there are difficulties with retardation. Thus, a patient with a demonstrative-exalted type of accentuation was observed suicidal tendencies at the intersection between hysterical manifestation and desperation. Besides, the patients' evidence suggests that, in the majority of cases,

HK disease intensified their general sensitivity and susceptibility to negative effects, actualized particular maladaptive reactions which quickly exhaust resources of the organism and lead to personality neurotization. The scientific literature underlines an association of development and progression of depressive and sub-depressive conditions with deficiency of adaptive resources of a person and with features of mediator control (deficiency of serotonin, norepinephrine, and dopamine is pointed out). The importance of food ration correction is also recognized since deficiency of some amino acids (L-Tyrosine, L- Glycine, L-Tryptophan, L-Glutamine) is considered as a growth factor depressive conditions [4].

In conclusion, combinations of two or more types of character accentuation were found in 81.4% of the patients with recurrent HK and emotive accentuation was a dominant type of accentuated character (92.5%). Of a prevailing value in the psychological structure of the studied persons are accentuations which general characteristics are high lability of emotional reactions, their depth and duration, impressibility, vulnerability, empathy, and susceptibility. The study performed is not exhaustive; it is important to study also a role of the disease in developing maladaptive forms of psychological response.

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**Table 1.** Incidence and a degree of expression (Leonhard–Shmishek's questionnaire score) of accentuation types in the patients with herpetic keratitis

	<b>emotive</b>	<b>stuck</b>	<b>hyperthymic</b>	<b>demonstrative</b>	<b>pedantic</b>	<b>cyclothymic</b>	<b>exalted</b>	<b>excitable</b>	<b>distymic</b>	<b>anxious (fearful)</b>
F (%)	92.5	81	62.5	59.2	59.2	56.0	44.4	40.0	37	25.9
M	18.6	15.9	17.6	18.1	16.8	18.5	21.0	15	16.8	15.0
95% CI	17.1-20.0	15.1-16.2	15.8-19.2	13.3-16.7	15.7-18.8	16.5-20.4	18.1-22.0	13.2-18.4	15.0-18.7	14.2-16.7
SD	1.7	1.6	3.1	2.8	2.0	3.1	3.1	3.8	2.2	1.2
m	0.7	0.4	1.0	0.7	0.5	0.9	0.9	1.1	0.8	0.5

Note: F (%) – frequency of accentuation incidence; M – mean questionnaire score; 95% CI – confidence interval; SD- standard deviation; m – error of mean