Correlations between the severity of oily skin and the emotional impact of oily skin with anthropo-somatotypological parameters of men and women with seborrheic dermatitis

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The increase in the prevalence and age of seborrhea, its significant impact on the psycho-emotional sphere, social status and social adaptation of patients determines the relevance of further study of the causes of dermatosis in the key of constitutional psychodermatology, namely - the study of relationships between oily skin and emotional impact of oily skin with anthropometric indicators. The aim of the study was to analyze the correlations between Oily Skin Self Assessment Scale (OSSAS) and Oily Skin Impact Scale (OSIS) in men and women with seborrheic dermatitis with body structure and size indicators. A survey of 40 men and 40 young women with generalized fatty seborrheic dermatitis was done. The OSSAS and OSIS scoring system was used to assess the severity of oily skin and the emotional impact of oily skin in seborrheic dermatitis. Anthropometric survey was carried out according to the scheme of Bunak V. V. (1941). The mathematical scheme of Carter J. and Heath B. (1990) was used to evaluate the somatotype. Matiegka J. (1921) formulas were used to calculate body weight components. In addition, the muscle component of body weight was assessed by the American Nutrition Institute. Correlation analysis was performed in the license package “Statistica 6.0” using the non-parametric Spearman’s method. As a result of the conducted researches multiple reliable and moderate unreliable correlations of OSSAS or OSIS with anthropo-somatotypological indicators of men and women of patients with generalized fatty form of seborrheic dermatitis of mild and severe course were established. The practical lack of similar correlations between OSIS and anthropo-somatotypological parameters in men and women with severe seborrheic dermatitis is noteworthy. Quantitative analysis of reliable and moderate unreliable correlations of OSSAS or OSIS with anthropo-somatotypological parameters in men and women with seborrheic dermatitis of mild and severe course showed that the vast majority of such correlations are inverse, and unreliable average correlations are often observed (except for OSSAS correlations with anthropo-somatotypological parameters in women with mild disease). It was also found that regardless of sex, most of the reliable or moderately unreliable correlations between OSSAS or OSIS and anthropo-somatotypological indicators are observed in the mild course of the disease. The obtained results of the correlation analysis expand the current understanding of the risk criteria and unfavorable prognosis of seborrheic dermatitis.

Keywords: seborrheic dermatitis, Oily Skin Self Assessment Scale (OSSAS), Oily Skin Impact Scale (OSIS), anthropometric indicators, somatotypological indicators, correlations.

Introduction
The activity of the sebaceous glands depends on many components and the amount of sebum can change throughout life. Oily skin is most common in young people during puberty, but is often associated with the constitutional type. Hypertensives are more likely to have thick and oily skin. It is thick, covered with large pores filled with sebaceous glands, comedones, prone to acne, has a greasy sheen, often gray. The test for fat in the central and lateral parts of the face is positive [17].

In itself, increased oiliness of the skin is not dangerous...
for humans, but causes some discomfort - both physiological and psychological [8]. In comparison with healthy individuals with high oiliness of the skin in patients with seborrhea, there is an increase in the composition of sebum androgens and a decrease in estrogen. With seborrhea in the sebum decreases the concentration of linoleic acid, which leads to an increase in skin pH, changes in epithelial permeability, an increase in the number of microorganisms on the skin surface. The main manifestations of the disease - itching, peeling, the appearance of white scales-crusts, redness and swelling of the affected areas [5, 7, 11].

According to studies by foreign colleagues [6, 8], patients with increased oiliness significantly reduce the quality of life, increase the frequency of anxiety and depression, subjective discomfort compared to healthy peers. In our domestic sample, similar indicators of psycho-emotional state due to the degree of oiliness of the skin have not been studied so far. Increasing the prevalence and expansion of the age limits of this pathology, its significant impact on the psycho-emotional sphere, social status and social adaptation of patients determines the urgency of this problem and the need for further study of the causes of seborrhea in the context of constitutional psychodermatology.

The purpose of the study - to analyze the correlations between the severity of oily skin (OSSAS) and the emotional impact of oily skin (OSIS) in men and women with seborrheic dermatitis with indicators of body structure and size.

Materials and methods

Survey of 40 men and 40 young women (25-44 years according to the age periodization of the WHO, 2015) patients with generalized fatty seborrheic dermatitis was conducted on the basis of the Department of Skin and Venereal Diseases with a postgraduate course in National Pirogov Memorial Medical University, Vinnytsya and the Military Medical Clinical Center of the Central Region.

The OSSAS scoring system was used to assess the severity of oily skin in seborrheic dermatitis [1]. The intensity of the main symptoms of oily skin is assessed on a 5-point scale: 1 - not very; 2 - soft; 3 - moderately; 4 - strongly; 5 - very strong. Final evaluation of indicators: 12-36 points - easy course; 37-60 points - severe course.

The OSIS scoring system was used to assess the severity of the emotional impact of oily skin [1]. The influence of oily skin on the emotional state of the body is assessed on a 5-point scale: 1 - does not bother; 2 - to put it mildly, worries; 3 - moderately disturbing; 4 - much disturbing; 5 - very disturbing. Final evaluation of indicators: 2-6 points - mild course; 6-10 points - severe course.

Anthropometric survey was conducted according to the scheme of Bunak V. V. [3]. The mathematical scheme of Carter J. and Heath B. was used to evaluate the somatotype [4]. J. Matiegka's formulas were used to calculate fat, bone and muscle components of body weight [13]. In addition, the muscle component of body weight was assessed by the method of the American Institute of Nutrition (AIN) [16].

Correlation analysis was performed in the license package "Statistica 6.0" using the non-parametric Spearman's method.

Results

Correlations between the severity of oily skin (OSSAS) or the severity of the emotional impact of oily skin (OSIS) with the structure and size of men and women with seborrheic dermatitis of mild and severe course are shown in tables 1 and 2.

Table 1. Correlations of OSSAS with indicators of body structure and size of men and women with seborrheic dermatitis of mild and severe course.

| Indexes | Men       |          | Women     |          |
|---------|-----------|----------|-----------|----------|
|         | mild course | severe course | mild course | severe course |
| OB_GL   | -0.20     | -0.19    | -0.36     | -0.17    |
| SAQ_DUG | -0.39     | -0.19    | -0.13     | -0.13    |
| B_DL_GL | -0.31     | -0.09    | 0.11      | 0.20     |
| B_SH_GL | 0.18      | -0.40    | -0.14     | 0.03     |
| N_SH_GL | -0.18     | -0.18    | 0.07      | -0.15    |
| SH_LCA  | -0.04     | 0.06     | -0.28     | 0.02     |
| SH_N_CH | 0.04      | 0.02     | -0.09     | 0.40     |
| W       | -0.24     | -0.30    | -0.51     | -0.41    |
| H       | -0.13     | 0.00     | -0.38     | -0.41    |
| S       | -0.22     | -0.25    | -0.31     | -0.43    |
| ATND    | -0.19     | 0.09     | -0.36     | -0.42    |
| ATL     | 0.01      | 0.20     | -0.33     | -0.24    |
| ATPL    | -0.17     | 0.14     | -0.35     | -0.46    |
| ATP     | -0.21     | -0.28    | -0.27     | -0.21    |
| ATV     | 0.09      | 0.18     | -0.29     | -0.27    |
| EPPL    | -0.39     | -0.21    | -0.31     | -0.32    |
| EPPR    | -0.08     | -0.12    | -0.35     | -0.41    |
| EPG     | -0.14     | -0.50    | -0.51     | -0.17    |
| OBPL1   | -0.15     | -0.60    | -0.54     | -0.44    |
| OBPL2   | 0.40      | -0.35    | -0.46     | -0.32    |
| OBPR1   | -0.49     | -0.20    | -0.36     | -0.21    |
| OBPR2   | -0.53     | -0.26    | -0.28     | -0.30    |
| OBPR3   | -0.11     | -0.44    | -0.48     | -0.23    |
| OBB     | 0.14      | -0.10    | -0.53     | -0.29    |
| OBG     | -0.32     | -0.26    | -0.60     | -0.20    |
| OBG1    | -0.29     | -0.25    | -0.40     | -0.11    |
| OBG2    | 0.02      | -0.18    | -0.45     | -0.06    |
| OBGH    | -0.40     | -0.23    | -0.31     | -0.32    |
| OBBB    | -0.01     | -0.36    | -0.48     | -0.38    |
| OBK     | -0.15     | -0.28    | -0.40     | -0.30    |
| OBS     | 0.31      | -0.09    | -0.57     | -0.06    |
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Continuation of table 1.

| Indexes | Men mild course | Men severe course | Women mild course | Women severe course |
|---------|----------------|------------------|-------------------|---------------------|
| OB GK 1 | -0.34          | -0.28            | -0.29             | -0.23               |
| OB GK 2 | -0.39          | -0.31            | -0.21             | -0.42               |
| OB GK 3 | -0.35          | -0.24            | -0.26             | -0.35               |
| PSG     | -0.23          | -0.32            | -0.30             | -0.18               |
| PNG     | -0.40          | -0.14            | -0.14             | -0.12               |
| SGK     | -0.55          | -0.06            | -0.55             | -0.45               |
| ACR     | 0.04           | -0.03            | -0.58             | -0.10               |
| SPN     | -0.16          | -0.14            | -0.44             | 0.01                |
| CRIS    | -0.17          | -0.21            | -0.50             | -0.03               |
| TROCH   | 0.04           | -0.49            | -0.51             | -0.21               |
| CONJ    | 0.64           | 0.20             | -0.33             | 0.26                |
| GB      | -0.30          | -0.08            | -0.50             | -0.31               |
| GBD     | -0.27          | 0.13             | -0.45             | -0.18               |
| GGL     | -0.22          | -0.19            | -0.16             | -0.23               |
| FX      | -0.31          | -0.15            | -0.50             | -0.39               |
| MX      | -0.30          | -0.32            | -0.52             | -0.18               |
| LX      | 0.18           | 0.30             | 0.51              | 0.26                |
| SOMAT   | 0.38           | 0.38             | 0.24              | 0.16                |
| MM      | -0.35          | -0.25            | -0.31             | -0.39               |
| OM      | -0.29          | -0.50            | -0.52             | -0.40               |
| DM      | -0.28          | -0.25            | -0.37             | -0.33               |
| MA      | -0.46          | -0.15            | -0.30             | -0.27               |

Notes: here and in the following table, inaccurate direct correlations of medium strength are highlighted in yellow; reliable direct correlations of medium strength are highlighted in magenta; strong reliable inverse correlations are highlighted in red; inaccurate inverse correlations are highlighted in green; significant inverse correlations of medium strength are highlighted in blue; strong reliable inverse correlations are highlighted in purple; OB GK - head circumference (cm); B DL GL - the largest length of the head (cm); N SH GL - the smallest width of the head (cm); SH N CH - width of the lower jaw (cm); SAG DUG - sagittal arch of the head (cm); B SH GL - the largest width of the head (cm); SH LICA - face width (cm); W - body weight (kg); H - body length (cm); AT ND - height of the upper thoracic point (cm); AT L - pubic point height (cm); AT PL - height of the acromial point (cm); ATP - height of the finger point (cm); ATV - height of the trochanteric point (cm); EP PL - width of the distal epiphysis (WDE) of the shoulder (cm); EP PR - WDE of shin (cm); OBGK1 - chest girth on inspiration (cm); OBGK2 - chest girth on exhalation (cm); OBGK3 - chest girth with calm breathing (cm); P SG - transverse mid-chest size (cm); PNG - transverse lower chest size (cm); SGK - anterior-posterior size of the chest (cm); ACR - shoulder width (cm); SP IN - interepiphenal distance (cm); CRIS - intercrural distance of the pelvic (cm); TROCH - intercrotcheteric distance of the pelvis (cm); CONJ - superficial conjugate (cm); GZ PL - thickness of skin and fat folds (TSF; on a back surface of a shoulder (mm); GPP - TSF on a front surface of a shoulder (mm); GPR - TSF on a forearm (mm); GL - TSF at the lower angle of the scapula (mm); GGR - TSF on a breast (mm); G - TSF on the abdomen (mm); GB - TSF on the side (mm); GDB - TSF on a hip (mm); GGL - TSF on crus (mm); FX - endomorphic component of the somatotype (scores); MX - mesomorphic component of the somatotype (scores); LX - ectomorphic component of the somatotype (scores); SOMAT - type of somatotype (1 - endomorph, 2 - mesomorph, 3 - ectomorph, 4 - ectomesomorph, 5 - endoectomorph, 6 - middle intermediate); MM - muscle component of body weight according to Matieka (kg); OM - bone component of body weight according to Matieka (kg); DM - fat component of body weight according to Matieka (kg); MA - muscle component of body weight by the method of AIN (kg).

Table 2. Correlations of OSIS with indicators of body structure and sizes of men and women with mild and severe seborrhoeic dermatitis.

| Indexes | Men mild course | Men severe course | Women mild course | Women severe course |
|---------|----------------|------------------|-------------------|---------------------|
| OB GL   | -0.56          | -0.12            | 0.35              | -0.33               |
| SAG_DUG | 0.20           | -0.04            | 0.46              | -0.24               |
| B_DL_GL | 0.02           | -0.25            | 0.77              | -0.12               |
| B_SH_GL | -0.33          | -0.19            | 0.09              | 0.06                |
| N_SH_GL | -0.56          | 0.00             | 0.17              | 0.00                |
| SH_LICA | -0.20          | 0.23             | 0.32              | 0.17                |
| SH_N_CH | -0.32          | 0.23             | 0.35              | 0.12                |
| W      | -0.28          | -0.01            | -0.20             | 0.01                |
| H      | 0.28           | -0.06            | 0.16              | -0.15               |
| S      | -0.11          | -0.01            | -0.01             | -0.01               |
| ATND   | 0.18           | -0.11            | 0.12              | -0.24               |
| ATL    | 0.07           | -0.27            | -0.13             | -0.34               |
| ATPL   | 0.18           | -0.12            | 0.17              | -0.21               |
| ATP    | -0.36          | -0.36            | 0.39              | -0.29               |
| ATV    | 0.00           | -0.26            | -0.05             | -0.36               |
| EPPL   | -0.30          | 0.02             | -0.24             | -0.02               |
| EPPR   | 0.12           | -0.11            | -0.25             | -0.14               |
| EPB    | -0.31          | -0.04            | 0.12              | -0.06               |
| EPG    | 0.09           | -0.21            | 0.05              | -0.18               |
| OBPL1  | -0.17          | -0.09            | -0.14             | 0.03                |
| OBPL2  | -0.20          | -0.09            | -0.31             | 0.03                |
| OBPR1  | -0.33          | 0.02             | -0.19             | -0.10               |
| OBPR2  | -0.02          | 0.02             | -0.28             | -0.04               |
| OBB    | -0.42          | -0.01            | -0.25             | -0.12               |
| OBG1   | -0.28          | 0.08             | 0.00              | -0.25               |
Discussion

Possible causes of seborrhea - hereditary predisposition, the influence of external adverse factors, metabolic disorders and neuroendocrine disorders. The disease affects people of different ages and social status [2, 18, 19].

Anthropological approach in the clinic of skin diseases allows you to correctly and timely diagnose the problem, identify risk groups and build a whole prognostic system for a particular dermatosis [9, 10, 12, 14]. The literature provides data on the constitutional and hereditary nature of the predisposition to seborrhea, which are generalized by polygenic or multifactorial type of inheritance. There is scientific evidence of the influence of constitutional factors on the possible development of dermatosis, including weight, height and body mass index. The composition of sebum in people of different constitutional types differs significantly and varies with varying degrees of pathological condition [15, 20]. Despite the fact that in the screening diagnosis of seborrhea the traditional place is occupied by information obtained using dermatological and general clinical methods of examination, no less important in the diagnosis of dermatosis are data that take into account somatotype and its relationship to skin oiliness and emotional state of patient.

The analysis of OSSAS correlations with anthroposomatotypological indicators of men and women with mild and severe seborrhoeic dermatitis revealed the following multiple reliable and moderate unreliable correlations:

*in men with a mild course of the disease* - moderate reverse (r = from -0.31 to -0.53), mostly unreliable, correlations with more than half of the girth body sizes and as a consequence with the mesomorphic component of the somatotype (r = -0.30) and muscular components of body weight according to Matiegka and AIN (r = -0.35 and -0.46);

*in men with a severe disease course* - attract attention only reliable medium strength and strong feedback from WDE of long tubular bones of the lower extremities (r = -0.50 and -0.60);

*in women with a mild course of the disease* - moderate inverse (r = from -0.30 to -0.52), mostly unreliable, correlations with all total, most longitudinal body size and all indicators of the component composition of body weight; medium strength inverse (r = from -0.31 to -0.55), mostly reliable, connections with all indicators of WDE of long tubular bones of extremities; inverse, mostly moderate (r = -0.30 to -0.61), reliable and unreliable correlations with most of the girth, transverse body size and indicators of TSFF; medium strength significant inverse (r = -0.50 and -0.52) correlations with endo- and mesomorphic components of the somatotype and medium strength reliable direct (r = 0.51) correlations with the ectomorphic component of the somatotype;

*in women with a severe disease course* - moderate reversible (r = from -0.30 to -0.44), mostly unreliable, correlations with all total, most indicators of WDE of long tubular bones of the extremities and indicators of the component composition of body weight, almost half the girth body sizes and a third of TSFF indicators.

A quantitative analysis of reliable and moderate unreliable correlations in men and women with mild to severe seborrhoeic dermatitis between OSSAS and anthropo-somatotypological indicators revealed the following distribution of correlations:

*in men with a mild course of the disease* - 21 correlations out of 58 possible (36.2 %), among which 1.7 % of strong direct reliable, 1.7 % of average force of unreliable, 6.9 % of...
average force of reverse reliable and 25.9 % of average force of reverse unreliable. The relative majority of correlations were established with somatotype components (66.7 % - all mean inverse inaccuracies), girth body sizes (13.3 % of mean inverse force and 46.7 % of mean inverse inaccuracy), transverse torso sizes and indicators of the component composition of body weight (by 25.0 % of the average strength of the inverse reliable and 25.0 % of the average strength of the inverse unreliable);

in men with a severe course of the disease - 16 correlations out of 58 possible (27.6 %), among which 3.4 % of the average force of direct unreliable, 1.7 % of strong inverse reliable, 6.9 % of the average force of inverse reliable and 15.5 % of the average force of inverse unreliable. The relative majority of correlations are established with components of a somatotype (by 33.3 % of average force of direct and inverse unreliable), WDE of long tubular bones of extremities (by 25.0 % of strong and average force of inverse reliable), cephalometric indicators (14.3 % of average force of inverse reliable and 28.6 % of average forces of inverse unreliability);

in women with a mild course of the disease - 44 correlations out of 59 possible (74.6 %), among which 1.7 % of the average strength of direct reliable, 3.4 % of strong inverse reliable, 33.9 % of the average strength of inverse reliable and 35.6 % of the average strength of inverse unreliable. The relative majority of correlations were established with total body sizes (33.3 % of the mean force of the inverse reliable and 66.7 % of the average force of the inverse unreliable), WDE of long tubular bones (75.0 % of the average force of the inverse reliable and 25.0 % of the average force of the inverse unreliable), sizes of the pelvis (by 25.0 % of reversible strong reliable and medium strength of unreliable and 50.0 % of average strength of inverse reliable), somatotype components (33.3 % of average strength of direct reliable and 66.7 % of average strength of inverse unreliable), indicators of component composition of body weight (25.0 % of average strength of inverse reliable and 75.0 % of the average force of the inverse unreliable), TSFF (by 44.4 % of the average force of the inverse reliable and unreliable), transverse torso dimensions (50.0 % of the average force of the inverse reliable and 25.0 % of the average force of the inverse unreliable), girth body sizes (by 33.3 % of the average force of the inverse reliable and unreliable and 6.7 % strong reverse reliable) and longitudinal body dimensions (60.0 % of the average force of the inverse unreliable);

in women with a severe disease course - 23 correlations out of 59 possible (39.0 %), among which 1.7 % of the average strength of direct unreliable, 5.1 % of the average strength of reverse reliable and 32.2 % of the average strength of reverse unreliable. The relative majority of correlations are established with total body size (100 % of the mean force of inverse inaccuracies), indicators of the component composition of body weight (75.0 % of the average force of inverse unreliable), girth body sizes (46.7 % of the average force of the reverse unreliable) and longitudinal body sizes (20.0 % of the average force of the reverse reliable and unreliable).

The analysis of OSIS correlations with anthroposomatotypical indicators of men and women with mild and severe seborrheic dermatitis revealed the following multiple reliable and moderate unreliable correlations:

in men with a mild course of the disease - moderate inverse (r = from -0.30 to -0.56), mostly unreliable, correlations with more than half of the cephalometric parameters, transverse torso size and TSFF, half of the WDE of the extremities and girth sizes and as a consequence with meso- and endomorphic component of somatotype and muscular components of body weight according to Matiegka and AIN;

in men with severe disease course - not found;

in women with a mild course of the disease - direct (r = from 0.32 to 0.77), mostly moderate, reliable and unreliable correlations with most cephalometric indicators, as well as inverse (r = from -0.31 to -0.62), mostly moderate, reliable and unreliable correlations with almost half of the girth size of the body, most of the transverse dimensions of the torso and a third of the indicators of TSFF;

in women with severe disease course - not found.

A quantitative analysis of reliable and moderate unreliable correlations in men and women with mild and severe seborrheic dermatitis between OSIS and anthroposomatotypical indicators revealed the following distribution of correlations:

in men with a mild course of the disease - 26 correlations out of 58 possible (44.8 %), among which 1.7 % of the average strength of direct unreliable, 12.1 % of the average strength of reverse reliable and 31.0 % of the average strength of reverse unreliable. The relative majority of correlations were established with the components of the somatotype (33.3 % of the average force of the inverse reliable and 33.3 % of the average force of the direct and inverse unreliable), transverse torso sizes (25.0 % of the average force of the inverse reliable and 50.0 % of the average force of the inverse unreliable), cephalometric parameters (28.6 % of the average strength of the inverse reliable and unreliable), WDE of long tubular bones and indicators of the component composition of body weight (50.0 % of the average force of the inverse unreliable), girth body sizes (20.0 % of the average force of the inverse reliable and 26.7 % of the average force of the inverse unreliable) and TSFF (44.4 % of average force of return unreliable);

in men with severe disease course - 4 correlations out of 58 possible (6.9 %), among which 5.2 % of the average strength of direct unreliable and 1.7 % of the average strength of reverse unreliable. The relative majority of correlations are established with pelvic size (66.7 % of mean inverse unreliable strength);

in women with a mild course of the disease - 20 correlations out of 59 possible (33.9 %), including 1.7 % of
strong direct reliable, 1.7 % of the average strength of direct reliable, 10.2 % of the average strength of direct unreliable, 1.7 % of strong reverse reliable, 6.8 % of the average strength of the inverse reliable and 11.9 % of the average strength of the inverse unreliable. The relative majority of correlations were established with the transverse dimensions of the torso (25.0 % of the mean force of the inverse reliable and 50.0 % of the average force of the inverse inaccurate), cephalometric indicators (14.3 % of direct strong and medium strength of the reliable and 42.9 % of the direct force of the unreliable) and girth body sizes (by 20.0 % of the average force of inverse reliable and unreliable and 6.7 % of strong inverse reliable).

In women with a severe course of the disease - 9 correlations out of 59 possible (15.3 %), among which 3.4 % of the average strength of direct reliable, 1.7 % of the average strength of reverse reliable and 10.2 % of the average strength of reverse unreliable. The relative majority of correlations were established with TSFF (11.1 % of the average strength of the inverse reliable and 11.9 % of the average strength of direct reliable, 5.1 % of strong inverse reliable, 6.8 % of the average strength of direct unreliable, 1.7 % of strong reverse reliable, 6.8 % of the average strength of the inverse reliable and 11.9 % of the average strength of the inverse unreliable). Thus, founded correlations between men and women with seborrhoeic dermatitis, between OSSAS or OSIS and anthropo-somatotypological indicators, expands the current understanding of risk criteria and unfavorable prognosis of the disease.

Conclusion
1. When analyzing the correlations of OSSAS or OSIS with anthropo-somatotypological indicators of men and women with generalized fatty seborrhoeic dermatitis of mild and severe course, it was found that the predominant number of reliable or moderate unreliable (observed more often, except for OSSAS correlations with anthropo-somatotypic dermatitis indicators in women with mild disease) correlations are reversible.

2. In the analysis of correlations of OSSAS or OSIS with anthropo-somatotypological indicators of men and women with seborrhoeic dermatitis of mild and severe course, it was found that regardless of sex, most reliable or moderately unreliable correlations are observed in mild disease.

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