Chronic allergic skin diseases in men: the influence of age-related dishormonal status

N. Yu. Reznichenko
Zaporizhzhia State Medical University, Ukraine

The study of the etiology and pathogenesis of allergic skin diseases, as well as a reasonable selection of their optimal treatment are extremely relevant problems of modern medicine. Changes in the sex and gonadotropic hormones levels, which occur in patients with chronic allergic dermatoses and affect them, are studied insufficiently.

The objective of this work was to study changes in levels of sex and gonadotropic hormones in patients with allergic dermatoses in older age groups and the development of effective methods of their treatment.

Materials and Methods. Were examined 203 men: 36 healthy persons aged 25–44 years, 167 male aged 45–64 years (including 63 healthy males and 104 patients with chronic allergic dermatoses). The assessment of allergic dermatoses severity was conducted according to the SCORAD system. The evaluation of patients’ life quality was performed by means of a DLQI questionnaire. The Aging Males Symptoms Scale was used. The concentration of testosterone, testosteron-binding globulin, follicle stimulating hormone, luteinizing hormone, prolactin were studied in blood serum by ELISA.

Results. During the study it was found that male patients with chronic allergic dermatoses had significantly lower testosterone levels and significantly higher levels of follicle stimulating hormone, luteinizing hormone, prolactin, testosteron-binding globulin in comparison with the group of healthy men of similar age. Additional use of drug on the basis of steroidal saponins in the complex therapy of male patients aged 45–64 years with chronic allergic dermatoses had a positive clinical effect, which manifested by reduction of SCORAD index, DLQI index, Aging Males Symptoms Scale index and also normalized the level of testosterone. Additional use of nootropic drug in this cohort of patients had positive clinical effect, which manifested by reduction of SCORAD index, DLQI index, Aging Males Symptoms Scale index and also normalized the levels of testosterone, follicle stimulating hormone, luteinizing hormone and prolactin.

Conclusions. The obtained results indicate the existence of age-related dishormonal state in male patients aged 45–64 years with chronic allergic dermatoses. The results of investigation substantiate the feasibility of corrective measures in male patients with allergic chronic dermatoses, by the use of nootropic drug and drug on the basis of steroidal saponins.

Key words: dermatitis, hormones, males.

Ключові слова: дерматити, гормони, чоловіки.

Хронічні алергічні захворювання шкіри у чоловіків: вплив вікового дисгормонального статусу

Н. Ю. Резніченко

Вивчення етіології та патогенезу алергічних захворювань шкіри, як і вибір оптимального лікування, являють собою надзвичайно важливі проблеми сучасної медицини. Зміни рівнів статевих і гонадотропних гормонів, що відбуваються в пацієнтів із хронічними алергічними дерматозами та впливають на них, вивчені недостатньо.

Мета роботи – вивчити зміни рівнів статевих і гонадотропних гормонів у пацієнтів з алергічними дерматозами старших вікових груп і розробити ефективні методи їх лікування.

Матеріал та методи. Обстежили 203 чоловіки: 36 здорових осіб (25–44 років), 167 чоловіків (45–64 років), включаючи 63 здорових і 104 хворих із хронічними алергічними дерматозами. Тяжкість алергічних дерматозів оцінювали за шкалою SCORAD. Оцінювання якості життя здійснювали за опитувальником DLQI. Застосовували опитувальник Aging Males Symptoms Scale. Оцінювання якості життя здійснювали за опитувальнінок DLQI. Застосовували опитувальник Aging Males Symptoms Scale.

Результати. Під час дослідження виявили, що в чоловіків, які хворі на хронічні алергічні дерматози, рівень тестиостерону був вірогідно нижчим, а рівень фолікулостимулюючого гонадотропину, лютеїнізуючого гонадотропину, пролактину, тестостеронзв’язувального глобуліну – вірогідно вищими порівняно зі здоровими чоловіками аналогічного віку. Додаткове використання препарату на основі стероїдних сапонів у комплексній терапії хворих (45–64 років), які хворі на хронічні алергічні дерматози, мало позитивний клінічний ефект, що проявлялося зменшенням індексу SCORAD, індексу DLQI, індексу за Aging Males Symptoms Scale, а також нормалізацією рівню тестиостерону. Додаткове застосування nootropic drug in this cohort of patients had positive clinical effect, which manifested by reduction of SCORAD index, DLQI index, Aging Males Symptoms Scale index and also normalized the levels of testosterone, follicle stimulating hormone, luteinizing hormone and prolactin.

Висновки. Результати свідчать про наявність вік-асоційованого дисгормонального стану у хворих (45–64 років), які хворі на хронічні алергічні дерматози, доводять доцільність корегувальних заходів у чоловіків, які хворі на хронічні дерматози, шляхом застосування nootropic drug in this cohort of patients had positive clinical effect, which manifested by reduction of SCORAD index, DLQI index, Aging Males Symptoms Scale index and also normalized the levels of testosterone, follicle stimulating hormone, luteinizing hormone and prolactin.

The obtained results indicate the existence of age-related dishormonal state in male patients aged 45–64 years with chronic allergic dermatoses. The results of investigation substantiate the feasibility of corrective measures in male patients with allergic chronic dermatoses, by the use of nootropic drug and drug on the basis of steroidal saponins.
The main dermatoses with the leading allergic component in pathogenesis and clinical course are atopic dermatitis, various forms of eczema, allergic contact dermatitis [1,2]. The study of the etiology and pathogenesis of these skin diseases, as well as a reasonable selection of their optimal treatment are extremely relevant problems of modern medicine [1,2]. Numerous studies showed the complex multifaceted nature of the violations on the part of different organs and systems in patients with allergic dermatitis [2–4]. However, changes in the levels of sex and gonadotrophic hormones, which occur in patients with chronic allergic dermatose sand affect them, are studied insufficiently. This fact justifies the need for further research [4].

The objective of investigation
Investigation of changes in sex and gonadotrophic hormones levels in patients with allergic dermatitis in older age groups and the development of effective methods of their treatment.

Materials and methods
Were examined 203 men: 36 healthy persons aged 25–44 years, 167 male aged 45–64 years (including 63 healthy and 104 больных с хроническими аллергодерматозами). Оценка тяжести аллергодерматозов проводилась по шкале SCORAD. Оценка качества жизни проводилась по опроснику DLQI. Применялся опросник Aging Males Symptoms Scale. Концентрация тестостерона, тестостеронсвязывающего глобулина, фолликулостимулирующего, лютеинизирующего гормонов, пролактина определялась в сыворотке крови иммуноферментным методом.

The normality of data distribution was checked using the Shapiro–Wilk test. Statistical processing of results was considered reliable at p < 0.05, with only exception – the Shapiro–Wilk test at the significance level of 0.01. When comparing the data in different groups we used paired Student’s t-test with the calculation of arithmetic mean value (M) and the standard error of the arithmetic average (m).
Results and Discussion

During the study it was found that male patients with chronic allergic dermatoses had significantly lower testosterone levels and significantly higher levels of LH, FSH, prolactin, TSH in comparison with group of healthy men of similar age (Table 1).

Considering the obtained results of hormone levels and TSH investigation in male patients aged 45–64 years with chronic allergic dermatoses, we proposed additional use of the nootropic drug and phytomedicine based on steroidal saponins in the treatment of allergic diseases. The choice of a nootropic drug was caused by primarily identified violations of the gonadotropins levels in male patients of older age groups with chronic allergic dermatoses. Nootropic drugs have the ability to improve metabolism in brain and, consequently, to exert a normalizing effect on processes regulated by brain. The choice of plant-based steroidal saponins was grounded by the identified decrease in testosterone levels in male patients aged 45–64 years with chronic allergic dermatoses, which required appropriate correction. Herbal remedies contained mainly steroidal saponins of the furostanol type, among which protodioscin was prevailed. Protodioscin metabolized in the organism to dehydroepiandrosterone.

The results of the disease clinical picture dynamics and quality of life depending on the therapy regimens are presented in the Table 2. As it is seen from the Table 2, the courses of treatment in all therapeutic groups of patients led to improvement of the clinical course of chronic allergic dermatoses. It manifested by reduction of SCORAD index. However, the decrease in SCORAD index was more intense in individuals who were receiving additional nootropic drug or herbal drug on the basis of steroidal saponins. This is evidenced by the presence of significant differences in SCORAD index and percent ΔSCORAD between the group of patients who used standard therapy, and patients treated with the nootropic drug or herbal drug on the basis of steroidal saponins.

A similar trend was noted in the quality of patients’ life. Standard therapy of patients with chronic allergic dermatoses improved their quality of life, which was manifested by a decrease in DLQI. However, a better improvement of life quality was noted in patients who additionally received a nootropic medicine or herbal remedies on the basis of steroidal saponins. We obtained significant differences in the values of the DLQI index and percent ΔDLQI between the group of patients after the basic therapy and groups with additional use of a nootropic drug or phytomedicine based on steroidal saponins. Percentage of persons, who had DLQI index less than 5 points in 3 months from the beginning of treatment, was higher in the groups with additional use of a nootropic drug or phytomedicine based on steroidal saponins compared to persons who received only basic therapy.

AMS index after the basic therapy was slightly lower (32.8 ± 0.40) than before treatment (33.6 ± 0.4), but significant differences were not received. However, in patients with allergic dermatoses, who received basic therapy in combination with a nootropic drug and in combination with plant-based steroidal saponins, AMS index was significantly lower than before treatment (31.6 ± 0.7 and 31.7 ± 0.7 vs 33.6 ± 0.4 accordingly).

![Fig. 1. Hormone levels and TSH in male patients with chronic allergic dermatoses aged 45–64 years depending on the treatment (results obtained in healthy men aged 45–64 years taken as 1).](image-url)

**Table 1. The levels of AMS index, sexual hormones and gonadotropins, TSH in healthy men and males with chronic allergic dermatoses**

| Indicator                  | Males aged:                  | 25–44 years       | 45–64 years (healthy) | 45–64 years (with allergic dermatoses) |
|----------------------------|------------------------------|-------------------|-----------------------|----------------------------------------|
| Testosterone, nmol/L       | 18.67 ± 0.48                 | 14.72 ± 0.51      | 11.23 ± 0.47          |
| TSH, nmol/L                | 33.19 ± 0.44                 | 43.47 ± 0.98      | 51.13 ± 1.34          |
| FSH, IU/L                  | 3.12 ± 0.04                  | 3.98 ± 0.08       | 4.56 ± 0.06           |
| LH, U/L                    | 3.11 ± 0.04                  | 3.68 ± 0.05       | 4.07 ± 0.06           |
| PRL, mMe/L                 | 219.3 ± 2.4                  | 257.5 ± 2.2       | 286.1 ± 4.3           |
| AMS, score                 | 24.3 ± 0.4                   | 30.1 ± 0.4        | 33.6 ± 0.4            |

*: statistically significant differences (P < 0.05) when compared with males aged 25–44 years.
#: statistically significant differences (P < 0.05) when compared with the group after basic therapy.

**Table 2. Dynamics of clinical indicators and quality of life in patients with chronic allergic dermatoses, depending on treatment schemes**

| Groups of patients          | SCORAD | ΔSCORAD, % | DLQI | ΔDLQI, % | DLQI < 5, % |
|-----------------------------|--------|------------|------|----------|-------------|
| before treatment            | 44.1 ± 0.92 | 13.4 ± 0.43 | 47.4 |
| after basic therapy         | 24.0 ± 1.52* | 50.8 ± 2.67 | 47.8 ± 4.45 |
| after basic therapy and nootropic drug | 15.8 ± 1.83** | 66.6 ± 3.42* | 63.5 |
| after basic therapy and steroidal saponins | 17.4 ± 1.95** | 65.9 ± 3.32* | 62.7 |

*: statistically significant differences (P < 0.05) when compared with group of patients before treatment.
#: statistically significant differences (P < 0.05) when compared with group after basic therapy.
The study also included the investigation of the different schemes of chronic allergic dermatitis treatment effectiveness in relation to the normalization of the sex and gonadotropic hormones levels. The results are presented in Fig. 1. For clarity, the results of patients' examination were compared with the results of healthy men aged 45–64 years. The results of healthy males aged 45–64 years were taken as 1. As it can be seen from Fig. 1, the examination of patients in 3 months after the beginning of treatment showed that dyshormonal status of patients reduced on the background of the clinical picture improvement. However, the lowered testosterone levels and higher levels of FSH, prolactin, LH, and TSH remain in patients after basic therapy only in comparison with similar results in healthy men aged 45–64 years.

At the same time, concentrations of testosterone, FSH, LH and prolactin reached the levels of healthy men aged 45–64 years after 3 months of treatment in patients with chronic allergic dermatoses, who received basic therapy in combination with a nootropic drug (Fig. 1). Normalization of the FSH, prolactin, LH concentrations were seen, because nootropic drug had positive influence on the metabolic processes in the brain and, thereby, improved hormonal interaction.

The use of the drug on the basis of steroidal saponins in the treatment of chronic allergic dermatoses led to the normalization of testosterone concentrations in the blood of patients, reduced concentrations of LH to values obtained in healthy men aged 45–64 years (Fig. 1). The use of the drug on the basis of steroidal saponins in complex treatment of chronic allergic dermatoses did not give the possibility to reduce the level of FSH and prolactin in blood of patients that can be explained by the mechanism of the drug action. Normalization of testosterone concentrations does not automatically lead to the elimination of dyshormonal state, and requires targeted interventions.

Conclusions

Male patients aged 45–64 years with chronic allergic dermatoses had significantly lower testosterone levels and significantly higher levels of FSH, prolactin, LH, TSH in comparison with group of healthy men of similar age. Additional use of drug on the basis of steroidal saponins in the complex therapy of male patients aged 45–64 years with chronic allergic dermatoses had a positive clinical effect, which manifested by reduction of SCORAD index, DLQI index, AMS index and also normalized the level of testosterone. Additional use of nootropic drug in the complex therapy of male patients aged 45–64 years with chronic allergic dermatoses had positive clinical effect, which manifested by reduction of SCORAD index, DLQI index, AMS index and also normalized the levels of testosterone, FSH, prolactin, LH.

Prospects for further research: to study the influence of age-related dyshormonal state on clinical course of other chronic dermatoses.

References

[1] Carlsen, C., Dimich-Ward, H., Ferguson, A., Watson, W., Rousseau, R., & Dykinson, A. (2013). Atopic dermatitis in a high-risk cohort: natural history, associated allergic outcomes, and risk factors. Ann. Allergy Asthma Immunol., 110(1), 24–28. doi: 10.1016/j.anai.2012.10.005.

[2] Gammhausen, D., Hagemann, T., Bieber, T., Dimitriou, L., Fimmers, R., & Diepgen, T. (2013). Characterization of different courses of atopic dermatitis in adolescent and adult patients. Allergy, 68(4), 486–506. doi: 10.1111/all.12112.