APOPTOSIS INDICATORS AS CRITERIA FOR THE ADEQUACY OF THE SELECTED THERAPY IN THE TREATMENT OF SCLERODERMA

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Abstract

Scleroderma refers to common chronic connective tissue diseases from the group of systemic connective tissue diseases. The trend towards an increase in morbidity, the social significance of the problem, the torpid recurrent course determine the relevance of further study of the theoretical and practical aspects of this pathology.

Introduction

The interaction of various pathogenetic factors in the development of the disease complicates the choice of treatment methods and, obviously, sometimes reduces their effectiveness. With the stabilization of the pathological process with a tendency to resolve induration and sclerosis , enzyme preparations, immunomodulators (cycloferon), spasm of politics, biostimulants are indicated.

The aim of this study was to study the state of apoptosis depending on the timing of the disease of scleroderma.

Materials and methods

The main manifestation of apoptosis is chromatin degradation . It is based on the enzymatic cleavage of DNA.

Chromatin degradation during apoptosis is an active process that depends on temperature, energy sources, de novo RNA and protein synthesis . Different stages of DNA degradation are catalyzed by different forms

of endonucleases, which differ in substrate specificity and conditions for the manifestation of activity.

Methods for detecting apoptosis are quite diverse. Approximate identification of apoptosis is possible on the basis of the above morphological features. More evidence- based approaches in most cases are based on the identification of forming DNA breaks, its degradation and the loss of a part of the genetic material by the cell. Most often, electrophoretic separation of polydesis of oxyribonucleotide fragments extracted from cells is used.

Other methods are based on the synthesis of oligonucleotides from labeled precursors catalyzed by terminal deoxyribonucleotidyltransferase and their insertion into DNA through its free ends, which are formed at break sites.

Apoptosis indices in **patients with focal scleroderma (M + m)**

Indicators	Units of measure	Patients with focal scleroderma (n = 120)	Healthy (n = 20)
CD95	109 / l %	About 85 + 0.04 P <0 05 26 70+ 1 11	033 +007
Annexin V	ng / ml	P <0 05 35.90+ 0.78 P <0 001	1653 + 05 4.47+ 0.54

Note: P - reliability of the difference with similar indicators of healthy individuals. Apoptosis data
patients with focal scleroderma, depending on the duration of the process, are presented in the following table.

Data on apoptosis indices in patients with focal scleroderma , depending on the duration of the disease (M + w)

Indicators

CD95	10 9 l	0.82+ 0.01	0.83 + 0.01	0.88+ 0.01	0.33 + 0.07
	%	25.01 +0.21	25.03 + 0.13	27.65 +0.75	1 6.53 + 0- .5
Annexin V	ng / ml	23.5+ 0.45	24.1 + 0.34	36.7+ 0.8	4.47+ 0.54

Duration of illness
6-12 months (n = 47)
Duration of
illness
1-5 years old
(n = 30)
The duration of the disease is more
than 5 years
(n = 43)

Healthy
(n = 20)

Units of change

As follows from the analysis of the data obtained, in patients with focal scleroderma, there was an increase in apoptosis (an increase in the level of CD95 positive lymphocytes and Ps).

Studying the correlations between the level of indicators of cellular immunity and indicators of apoptosis, we drew attention to the presence of a close inverse correlation (r> -0.5) between indicators of cellular immunity (decrease in the amount of C D 3 +, C D 4+) and indicators of apoptosis (growth of CD95 and Annexin V). This inverse correlation reflects the degree of degradation of cellular immunity. There is an intensification of apoptosis processes due to the death of CD3 + and CD4 + cells.

Results and its discussion

Favorable dynamics from the pathological process began to manifest itself by the middle of the second week from the start of treatment. Improved general condition of patients, reduced paraesthesia, itching, numbness in the lesions gradually decreased inflammation in edematous erimatoznoy phase. In the induration stage, the skin became softer, more elastic, easier to fold, and areas of atrophy began to appear. By the end of the course of treatment, all patients of the main group showed a different degree of clinical improvement. The best results were obtained in patients with plaque form of scleroderma,especially with a localized process - clinical remission in 30.0% of patients compared to 16.7% in generalized (differences are significant p <0.01), significant improvement, respectively, in 55.0% and 16.7% of cases (p <0.05).

In the group of patients with lichen sclerosus, clinical remission was achieved in 9.1% of cases, significant improvement in 36.4%. These results were significantly lower than in patients with a localized plaque form of scleroderma.

The linear form of scleroderma turned out to be more resistant to the therapy, a significant improvement was noted only in 28.6% of cases compared to 55.0% in patients with localized plaque scleroderma (p <0.05).

With superficial scleroderma Gunbero and atrophoderma Passi-ni-Pierini, due to the small number of observations, it is difficult to interpret the results of treatment.

Analyzing the effectiveness of complex treatment depending on the activity of the scleroderma process, we found that clinical remission in the stage of erythema was achieved by the end of the course of treatment in only one patient with isolated foci (12.5%). In the rest of the patients in this group, the inflammatory reaction in the form of redness and swelling in the center of the lesions and a purple rim around the periphery persisted longer . A significant improvement was registered in 4 patients (26.7%), an improvement - in 9 (60.0%), a slight improvement in 3 (33.3%), ($p < 0.05$). Better results were obtained in patients who were in the induration stage , after attenuation of the process activity . Compaction in the lesions completely disappeared (clinical remission in 7 (29.2%) patients, residual induration (significant improvement) persisted in 11 (15.9%) partial induration (slight improvement) remained in 2 (8.3%) sick.

In patients who made up the third group (stage of atrophy), changes in scleroderma foci were insignificant, persistent atrophy persisted . These patients also had some skin tightening, which decreased in the course of treatment. An improvement was noted in 2 (33.4%) patients, a slight improvement in 4 (66.0%) patients.

Thus, the results of therapy were clearly dependent on the activity of the scleroderma process. The treatment carried out during the induction period turned out to be more effective than in the acute and subacute stages in the presence of inflammatory activity and the predominance of cutaneous erythema, while atrophy did not change much.

Thus, the proposed complex therapy leads to a rapid and pronounced improvement and allows you to achieve a stable remission.

References

1. Altinkaya, S., Yalcin, S. On the Chebyshev coefficients for a general subclass of univalent functions. Turkish Journal of Mathematics. (2018)42: 2885-2890. doi:10.3906/mat-1510-53
2. Benjamin, S. The Chebyshev Polynomials: Patterns and Derivation. The National Council of Teachers of Mathematics. 2004; 98(1).

3. Bieberbach, L. "Uber die Koeffizienten derjenigen Potenzreihen, welche eine schlichte
4. Abbildung des Einheitskreises vermitteln", Sitsungsber. Preuss. Akad. Wiss. Phys-Math. 1916; 940- 955.
5. Duren, P. L. Univalent Functions, Springer, New York, NY. USA. 1983.
6. Fekete, M., Szego, G. Eine bermerkung uber ungerade schlichte Funktionen, Journal of the London Mathematical Society. 1.2 (1933): 85-89.
7. Fatunsin, L. M., Opoola, T. O. New results on subclasses of analytic functions defined by Opoola differential operator. Journal of Mathematics Science System. 7(2017); 289-295. doi:10.17265/2159- 5291/2017.10.003.
8. Ganesh, K., Bharavi, S. R, Hari, P. M. Estimation of coefficient bounds for a subclass of analytic functions using Chebyshev polynomials. The 11th National conference on Mathematical Techniques and Applications, AIP Conf. Pro. 2019; 2112, 020146-1020146-14; doi:doi.org/10.1063/1.51123311.
9. Gurmeet, S. Fekete-Szego inequality for a new class and it's certain subclasses of analytic functions. General math. Notes, vol.21, 1, march 2014: 86-96.
10. Goodman, A. W. Univalent functions and non-Analytic Curves. Proceeding American mathematical Society. 1957; 8(3): 598-601.
11. Jacek, D., Ravinda, K. R., Janusz, S. Application of Chebyshev polynomials to classes of analytic functions. C.R. Acad. Sci. Paris. ser.I, 353(2015), 433-438.
12. Kanas, S., Darwish, H. E. Fekete-Szego problems for star-like and convex functions of complex order. Applied Mathematics Letter; 23(2010):778-782.