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T. P. Vysochanska

Bukovyna State Medical University
(Chernivtsi)

STATE OF THE MORBIDITY AND DIFFERENTIAL APPROACH TO THE TREATMENT OF PATIENTS WITH PSORIASIS IN DIFFERENT LANDSCAPE REGIONS OF NORTHERN BUKOVYNA

Key words: *Psoriasis, physico-geographical districts, elemental homeostasis, treatment.*

Abstract. *The morbidity was analyzed and futher results of the treatment of patients with psoriasis – inhabitants of different landscape districts of Northern Bukovyna were evaluated in this article due to differentiated prescription of element's containing drugs.*

Introduction

Psoriasis is a chronically-relapsing skin disease, which occurs in 2 to 4% of people in the world with a high probability of increase in the number of such patients, including Ukraine. In Ukraine there are more than 1 million registered cases of psoriasis today [1,8].

Topicality of the study of psoriasis depends on the character of its clinical course with widespread damage of the skin cover, with the development of complications, the formation of the resistance to basic therapy, leading to prolonged disability of patients, reducing their professional and social activity [1,6,9,10]. All this justifies an actuality of research to improve treatment and prevention of relapses of dermatosis.

According to modern research it is known that etiopathogenesis of psoriasis is multifactorial, where genetic determinism, immune and neuroendocrine disorders, metabolic and microcirculatory changes, etc. play a significant role [1,8,9]. There is, also, an information about an importance of an imbalance of macro- and microelement's homeostasis of patients in a pathogenesis of psoriasis [3].

The aim of research

To find out the morbidity and improve results of the treatment of patients with psoriasis with different landscape districts through a differentiated approach to the prescription of element's containing drugs based on detected element's changes in biosubstrates of patients.

Material and methods of research

Statistical reports on the morbidity of psoriasis among inhabitants of different (plains, foothills, mountain) districts of Chernivtsi region was analyzed according to their physico-geographical zoning [4].

71 patients with psoriasis are examined and treated , amongst which 41 men and 30 women, aged from 18 to 80 years old, living in urban and rural territories of different physico-geographical landscape regions of Chernivtsi (Northern Bukovyna) [4]: 23 (32, 4%) patients – in plains, 28 (39,4%) – in foothills and 21 (29,6%) – in the mountainous districts. All examined patients were diagnosed with chronic course of dermatosis with continued duration from 6 months to 35 years.

Index of psoriasis area severity– PASI [8], an average mean of which was 25,5 ± 0,712 in examined patients at the beginning of the treatment was calculated for an objective evaluation of clinical manifestations of psoriasis and effectiveness of different methods of its treatment in an examined patients under study.

In all patients with psoriasis the content of some macro- and microelements (iron, zinc, calcium, manganese) in biological substrates (blood, hair, nails) was determined by spectrophotometrical analysis before the treatment, at the end of the treatment and 6-8 months later after the treatment [5]. Control group includes 63 practically healthy candidates (donors) with response regions.

Statistical analysis of the results of research was performed on personal computer with using of statistical software (Excel, Statistica 6.0), the mean difference at $p < 0,05$ was considered for the probable sign [7].

Results of research

For the purpose of determining epidemiological peculiarities of psoriasis in inhabitants of Chernivtsi region (Northern Bukovina) were analyzed indices of statistical reports of Chernivtsi regional skin-venereological dispensary for the last 3 years (2010-

Table 1

Prevalence of psoriasis in different landscape regions of Northern Bukovyna in 2010-2012 years

Districts and towns of the region	Number of patients					
	absolute numbers			per 100,000 people		
	2010	2011	2012	2010	2011	2012
Plains						
Zastavna district	116	116	116	223,5	225,1	226,3
Kelmentsi district	84	77	73	192,6	177,9	170,3
Kitsman district	200	206	213	283,8	293,3	303,7
Novoselytsya district	69	78	88	84,4	96,3	109,5
Sokyryany district	144	138	133	319,8	308,6	298,3
Khotyn district	356	382	367	539,5	585,4	567,6
Novodnistrovsk	87	80	88	818,5	747,0	817,4
Foothills						
Gertsae district	101	108	116	311,7	332,7	356,5
Glyboka district	197	197	202	270,8	270,0	275,6
Storozhynets district	214	231	239	220,7	237,0	243,7
Chernivtsi	612	675	592	246,8	269,9	234,8
Mountain						
Vizhnitsa district	97	101	112	172,7	180,9	201,2
Putyla district	58	59	62	226,3	229,7	240,1
Total for the region	2335	2448	2401	259,1	271,6	266,1

Table 2

Indices of the content of macro- and microelements in biosubstrates of patients with psoriasis in different landscape territories of Chernivtsi region (M ± m)

Chemical element (mg/kg)	The content of macro- and microelements in biosubstrates of patients with psoriasis and persons of control group in different landscape regions					
	plains		foothills		Mountain	
	control group, n_1= 21	patients with psoriasis, n_1= 23	control group, n_2=22	patients with psoriasis, n_2= 28	control group, n_3=20	patients with psoriasis, n_3= 21
	Blood					
Calcium	4,18± 0,353	3,92± 0,344	5,80± 0,450	4,19± 0,456*	7,65± 0,590	3,57± 0,171***
Iron	69,1± 4,75	51,5± 3,71**	49,7± 4,88	49,2± 2,33	53,2± 4,64	47,4± 1,82
Manganese	0,033± 0,003	0,030± 0,005	0,033± 0,004	0,030± 0,004	0,022± 0,002	0,030± 0,002*
Zinc	3,88± 0,125	4,73± 0,600	3,59± 0,133	5,55± 0,569**	3,12± 0,171	3,71± 0,232*
	Hair					
Calcium	516,4± 20,6	677,9± 35,7***	600,5± 27,9	796,4± 50,0**	751,0± 56,3	743,8± 36,6
Iron	17,5± 0,899	16,4± 1,09	15,4± 0,54	14,1± 0,594	14,4± 0,598	13,1± 0,619
Manganese	1,22± 0,036	1,00± 0,150	1,10± 0,050	1,02± 0,102	1,20± 0,077	1,50± 0,100*
Zinc	196,1± 11,1	147,4± 5,88***	148,2± 4,33	138,8± 6,01	164,6± 5,16	154,2± 5,89
	Nails					
Calcium	823,5± 39,3	912,5± 48,7	750,6± 38,6	910,1± 46,4*	815,5± 41,3	739,4± 28,8
Iron	35,2± 1,27	28,3± 1,65**	32,1± 1,29	23,2± 1,68***	39,0± 2,12	25,4± 2,01***
Manganese	1,62± 0,128	0,780± 0,066***	1,43± 0,073	0,840± 0,045***	1,35± 0,097	1,43± 0,126
Zinc	315,8± 3,08	280,1± 15,9*	291,3± 8,84	259,1± 14,85	283,4± 14,2	179,7± 7,24***

Note. * –probability of the difference of indices according to control group: - p<0.05, ** - p <0,01; *** - p <0,001

2012) as to the prevalence of psoriasis in the region and, as well as, the distribution of patients with psoriasis according to physico-geographical zoning of Chernivtsi region (Northern Bukovina) were analyzed [4].

According to the data in table 1, there is a tendency to increasing in 2010-2012yy. of an absolute number of patients with psoriasis in Chernivtsi region: on 4,84% in 2011 as compared with 2010 and on 2,83% – in 2012 in comparison with 2010. Similarly an increase of the prevalence of psoriasis (per 100,000 people) index during last 3 years on the territory of Northern Bukovina was marked: on 4,82% in 2011 as compared with 2010, on 2,7% – in 2012 as compared with 2010. The highest indices and a tendency to an increase of the prevalence of psoriasis were found among inhabitants of Novodnistrovsk on the territory of plains of the region (in 2011 – 747,0 cases per 100,000 people, in 2012 – 817,4 cases per 100,000 people: an increase on 9,42%).

Among plain territories (table 1) high indices of the prevalence with the tendency to increase in 2010-2012yy. were observed in Khotyn district (from 539,5 to 567,6 cases per 100,000 people, an increasing on 5,21%) and Kitsman district (from 283,8 to 303,7 cases per 100,000 people, an increasing on 7,01%). The rising of the prevalence of psoriasis during 2010-2012yy. is observed, also, in other plain territories of the region – in Zastavna districts (from 223,5 to 226,3 cases per 100,000 people, an increasing on 1,25%) and Novoselytsya district (from 84,4 to 109,5 cases per 100,000 peolpe, an increasing on 29,7%).

Among foothill districts of Chernivtsi region (table 1) high indices of the prevalence of psoriasis with a tendency to increasing in 2010-2012yy. were observed in Gertsae district (from 311,7 to 356,5 cases per 100,000 people, an increasing on 14,4%), Glyboka district (from 270,8 to 275,6 cases per 100,000 people, an increasing on 1,77%) and Storozhinets district (from 220,7 to 243,7 cases per 100,000 people, an increase of 10,4%).

The lowest indices of the prevalence of psoriasis were observed (table 1) among inhabitants of mountain districts of the region – Vyzhnytsa district and Putyla district, but with a tendency to an increase of absolute number of patients in these territories during last 3 years (in accordance: in Vyzhnytsa district – from 172,7 to 201,2 cases per 100,000 people, an increasing on 16,5%; in Putila district – from 226,3 to 240,1 cases per 100,000 people, an increasing on 6,1%).

In the studing of the content of biological substrates in patients with psoriasis from different landscapes (plains, foothills, mountain) regions of Northern Bukovyna multidirectional changes of some macro- and microelements (calcium, iron, zinc, manganese) in the blood, hair and nails of patients were found (table 2), and correlations with their content in drinking water and soil from response territories were proved too [2,11].

According to the data, showed in table 2, in patients with psoriasis – inhabitants of plain regions the content of iron in the blood (in accordance on 25,4%, $p<0,01$), in the hair – zinc (in accordance on 24,8%, $p<0,001$) and nails – iron, zinc and manganese (in accordance: on 19,6%, $p<0,01$, 11,3%, $p<0,05$ and in 2,08 times, $p<0,001$) is probably reduced, in comparison with other candidates of observed group. In patients with psoriasis from foothill regions the content of calcium in the blood (in accordance on 27,8%, $p<0,05$), and in nails – iron and manganese (in accordance: on 27,8% and 41,3%, $p<0,001$) is decreased by probability, as compared with other candidates of observed group. In patients with psoriasis from mountain regions the level of calcium in the blood (in accordance in 2,14 times, $p<0,001$), in nails – zinc and iron (in accordance: on 36,6% and 34,9%, $p<0,001$) is probably decreased, compared with other candidates of observed blood group,.

Differentiated methods of the treatment of patients with psoriasis from different landscape regions with the prescription to basic therapy an element's containing drugs [2]: "Zincteral" (containing 124 mg zinc sulphati monohydrate, equivalent to 45 mg of zinc ions), "Ferrumlek "(100 mg of iron [III] hydroxidipolymaltosum)," Tothema "(iron gluconate, which corresponds to 50 mg of elemental iron, manganese gluconate, which corresponds to 1,33 mg of elemental manganese)," Calcium D3 Nycomed forte "(1250 mg of calcium carbonate, which is equivalent to 500 mg of elemental calcium) are developed, based on results of researches.

In the process of the treatment patients with psoriasis from different regions were divided into following groups: comparative, treated by basic therapy of psoriasis according to the Order of Ministry of Health of Ukraine № 312 on 08.05.2009, and main groups, treated by combined treatment – basic and elemental therapy .

Patients with psoriasis of main group from plain region have got treatment with prescription Ferrum Lek, and one month later (due to deficiency of zinc and iron in the hair and nails, and manganese – in nails) – Zincteral and Tothema during 1 month, then were established probable ($p<0,05$) increasing of the content of zinc in the hair (on 26,9%; before the

Table 3

Clinical results of different methods of the treatment of patients with psoriasis from different landscape regions, (M ± m)

Indices	Patients with psoriasis from different landscape regions					
	Plains		Foothills		Mountain	
	Comparative group, n=15	Main group, n=16	Comparative group, n=15	Main group, n=15	Comparativ egroup, n=15	Main group, n=16
Clinical recovery condition	4 (26,7%)	6 (37,5%)	3 (20,0%)	6 (40,0%)	-	2 (12,5%)
Significant improvement	5 (33,3%)	6 (37,5%)	4 (26,7%)	5 (33,3%)	8 (53,3%)	11 (68,7%)
Improvement	6 (40,0%)	4 (25,0%)	7 (46,7%)	4 (26,7%)	5 (33,3%)	3 (18,8%)
Unchanged	-	-	1 (6,6%)	-	2 (13,4%)	-
Deteriorating	-	-	-	-	-	-
Total	15 100,0	16 100,0	15 100,0	15 100,0	15 100,0	16 100,0

Table 4

PASI index in patients with psoriasis – inhabitants of different landscape regions, (M ± m)

PASI index	Patients with psoriasis from different landscape regions					
	Plains		Foothills		Mountain	
	Comparative group, n=15	Main group, n=16	Comparativ e group, n=15	Main group, n=15	Comparativ e group, n=15	Main group, n=16
Before the treatment	26,8 1,82	25,4 1,53	22,4 1,07	23,1 1,41	27,1 1,41	28,2 1,29
	p>0,05		p>0,05		p>0,05	
After the treatment	9,14 1,20	6,03 0,835	8,57 1,49	5,51 0,863	10,2 1,65	5,83 1,26
	p<0,01		p<0,01		p<0,001	
Index of the reduction of PASIindex (%)	65,9%	76,3%	61,7%	76,1%	62,4%	79,3%

Note. p – probability of the difference of indices in patients of different group

treatment – 141,1±5,82 mg/kg, after the treatment – 179,1±5,18 mg/kg), and manganese – in nails (on 32,7%, in accordance: 0,784±0,062 mg/kg and 1,04±0,071 mg/kg) and iron (on 22,8%, in accordance: 25,9±1,54 mg/kg and 31,8±1,66 mg/kg) with a tendency to an increasing content of iron in nails to patients of comparative group.

To base treatment of patients with psoriasis from foothill region, included in main group, were added Calcium D3 Nycomed forte, and one month later (due to deficiency of manganese and iron in nails) – Tothema during 1 month, resulting in after 6-8 months in these patients were found probable ($p<0,05$) increasing of manganese in nails (in accordance on 67,9%; before the treatment – 0,822±0,060 mg/kg, after the treatment – 1,38±0,072 mg/kg) without probable dynamics in patients of comparative group.

Patients with psoriasis of main group from mountain region with basic treatment have got Calcium D3 Nycomed forte, and a month later, because were determined probable reduction of the content of iron, zinc and calcium in the hair and nails – Zincteral, FerrumLek and Calcium D3 Nycomed forte during 1 month. An analysis of the content of studied elements in patients with psoriasis of comparative group, 6-8 months later after treatment are showed a decreasing of the content of zinc and iron in the hair, whereas in patients of main group – probable ($p<0,05$), compared with such indices at the end of the treatment, an increasing of the content of calcium in the blood (on 35,3%, in accordance: 3,23±0,131 mg/kg and 4,37±0,170 mg/kg) and iron (on 12,4%, in accordance: 43,3±1,49 mg/kg and 49,5±1,74 mg/kg), and in nails – an increasing, compared to baseline level, content of iron (on 22,13%; 25,4±1,76 mg/kg and 32,7±1,56 mg/kg) and zinc (on 18,7%; 179,7±5,63 mg/kg and 221,1±9,11 mg/kg), indicating a reduction of chronic element deficiency of these patients.

According to data, given in table 3, the best results of the treatment are stated in patients with

Table 5

Clinical results of the treatment of patients with psoriasis from different landscape regions, (Mm)

Indices	Patients with psoriasis from different landscape regions					
	Plains		Foothills		Mountain	
	Comparative group, n=15	Main group, n=16	Comparative group, n=15	Main group, n=15	Comparative group, n=15	Main group, n=16
Duration of the treatment, bed/day	25,6 1,13	25,0 1,09	23,7 3,10	23,6 1,41	25,0 0,683	23,7 1,08
	$p_{1-2}>0,05$		$p_{1-2}>0,05$		$p_{1-2}>0,05$	
Duration of the period of the remission, month:	4,38 0,874	3,93 0,683	5,38 0,976	5,27 0,859	5,10 0,903	5,01 0,923
- before the treatment - after the treatment	3,96 0,671	6,14 0,694	5,62 0,772	7,73 0,789	5,07 0,789	7,57 0,817
	p>0,05	p<0,05	p>0,05	p<0,05	p>0,05	p<0,05
	$p_{1-2}<0,05$		$p_{1-2}>0,05$		$p_{1-2}<0,05$	
Number of exacerbations per year, cases:	2,77 0,341	2,84 0,280	2,47 0,353	2,43 0,296	2,60 0,322	2,53 0,314
- before the treatment - after the treatment	2,93 0,316	1,97 0,247	2,42 0,295	1,47 0,172	2,73 0,300	1,68 0,232
	p>0,05	p<0,05	p>0,05	p<0,01	p>0,05	p<0,05
	$p_{1-2}<0,05$		$p_{1-2}=0,01$		$p_{1-2}<0,01$	

Notes. 1. p – probability of difference of indices before and after the treatment. 2. p_{1-2} – probability of difference of indices in patients of different groups

psoriasis from plains, foothills and mountain regions, included in main group have got differentiated elemental therapy, resulting in a significant number of these patients (according to regions: 75,0%, 73,3% and 81,2%) were discharged in a condition of clinical recovery or significant improvement, while among persons of comparative group the number of such patients was significantly lower (in accordance: 60,0%, 46,7% and 53,3%). The deterioration of the condition was observed in either group of patients with psoriasis.

The dynamics of PASI index in patients with psoriasis – inhabitants of different landscape regions in the process of the treatment is presented in table 4.

Before the treatment PASI index in an examined patients with psoriasis is ranged from 22,4 – 27,1 (table 4) without probable difference in patients from different landscape territories of Chernivtsi region. After the treatment the reduction of PASI index in patients of all groups were marked, but the most significant reduction was found in patients from plains, foothills and mountain region of main groups (in accordance on: 76,3%, 76,1% and 79,3%) with probable (p<0,01) difference of this index after the treatment in patients of comparative groups from the same regions (reduction on: 65,9%, 61,7% and 62,4%).

Clinical results of different methods of the treatments of patients with psoriasis from different landscape regions are shown in table 5.

According to data, presented in a table 5, the duration of the hospitalization of patients with psoriasis from different landscape regions, included in comparative and main groups, did not differ probable (p>0,05), but in patients of main groups due to the use of complex and phased element's containing treatment are set an improvement of long-term effects of their treatment. Thus, in patients with psoriasis of main groups after complex treatment are determined probable increasing of the duration of clinical remission of dermatosis (in patients from plain, foothill and and mountain regions in accordance: in 1,56 time, in 1,47 and 1,51 time, p<0,05), which was not observed in patients of comparative groups. In patients with psoriasis of main groups from different landscape regions, also, are marked the reduction of a number of relapses during the year (in accordance: in 1,44 times, p<0,05, in 1,65 times, p<0,01 and 1,51 times, p<0.05) with probable difference with the same index in patients of comparative groups from corresponding districts of Northern Bukovina.

Conclusions

1. In 2010-2012 yy. in Chernivtsi region a tendency to an increasing of a number of patients with psoriasis are revealed (on 4,84%); the highest indices of the prevalence of psoriasis – among inhabitants of towns and villages on the territory of plains and foothills, and the lowest – in mountain region.

2. Established, in patients with psoriasis – inhabitants of different landscape districts of Northern Bukovina are probable (p<0,05) changes of the content of essential macro- and microelements

(calcium, iron, zinc, manganese) in their biosubstrates (blood, hair, nails).

3. Differentiated approach to the treatment of patients with psoriasis from different landscapes (plains, foothills, mountain) regions with differentiated prescription to basic therapy drugs, containing deficient for patients elements (“Zincteral”, “FerrumLek”, “Tothema”, “Calcium D3 Nycomed forte”) contributes to the normalization or a tendency to the normalization of studied macro- and microelements in biological substrates of patients and improves clinical results of their treatment.

Prospects for further research

An optimization of differentiated therapy of patients with psoriasis – inhabitants of different landscape regions by an increasing of the spectrum of the determination of studied essential macro- and microelements in an organism of such patients is a prospect for further research.

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СТАН ЗАХВОРЮВАНОСТІ ТА ДИФЕРЕНЦІЙОВАНИЙ ПІДХІД ДО ЛІКУВАННЯ ХВОРИХ НА ПСОРІАЗ У РІЗНИХ ЛАНДШАФТНИХ РЕГІОНАХ ПІВНІЧНОЇ БУКОВИНИ

Т. П. Височанська

Резюме. У роботі проаналізовано захворюваність та оцінено результати лікування хворих на псоріаз – мешканців різних ландшафтних регіонів Північної Буковини внаслідок диференційованого призначення елементовмісних лікарських засобів.

Ключові слова: Псоріаз, фізико-географічне районування, елементний гомеостаз, лікування.

СОСТОЯНИЕ ЗАБОЛЕВАЕМОСТИ И ДИФФЕРЕНЦИРОВАННЫЙ ПОДХОД К ЛЕЧЕНИЮ БОЛЬНЫХ ПСОРИАЗОМ В РАЗНЫХ ЛАНДШАФТНЫХ РЕГИОНАХ СЕВЕРНОЙ БУКОВИНЫ

Т.П. Высочанская

Резюме.В работе проанализировано заболеваемость и оценено результаты лечения больных псориазом – жителей разных ландшафтних регионов Северной Буковины вследствии дифференцированного назначения элементосодержащих лечебных средств.

Ключевые слова: Псориаз, физико-географическое районирование, элементный гомеостаз, лечение.

Буковинский государственный медицинский университет, г. Черновцы

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