THE URINARY EXCRETION OF GLYCOSAMINOGLYCANS IN PSORIASIS

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SUMMARY : *The pathogenesis of psoriasis is still not understood very well. There are studies revealing that psoriasis is not limited to the skin.*

We assumed that urinary excretion of glycosaminoglycans (GAGs) might reflect a catabolism at the connective tissue and compared the urinary GAG levels of the psoriatics before and after therapy with the healthy controls.

The GAG levels of the psoriatics before therapy showed a statistically significant increase, compared with the healthy controls.

The GAG levels after therapy were decreased when compared with the levels before therapy. But this decrease was not statistically significant.

Key Words : *Glycosaminoglycan, Psoriasis.*

INTRODUCTION

The pathogenesis of psoriasis is still not understood very well. Several pathologies of the epidermis and dermis have been suspected and to what extent its abnormalities are confined is not known.

An increased uptake of 99 m-technetium dishosphonate observed in the bones of non-arthritis psoriatic patients points to a widespread abnormality of the connective tissue (5).

Assuming that the levels of urinary excretion of glycosaminoglycans (GAGs) might reflect a catabolism of the connective tissue, we searched for the urinary GAG levels of the patients with nonarthritic psoriasis vulgaris, before and after therapy and compared them with the healthy controls.

MATERIALS AND METHODS

15 patients, whose 6 were female and 9 male, who applied to our Dermatology outpatient department and diagnosed as psoriasis vulgaris were included in our study.

None of the patients had arthritic symptomps and they had not received any therapy at least for the previous 2 months.

Urine of 24 hours was collected from all the patients before PUVA therapy, and after all the skin lesions had cleared after therapy and from all the controls. The urinary levels of GAG was evaluated by the Whiteman method.

The students-t test was used for the statistical

analysis of the study (1, 7).

RESULTS

The ages of our 6 female, 9 male 15 patients varied between 19 and 56 with a mean value of 38.27. The duration of the clearence of the lesions were between 1 and 3 months, with a mean value of 2.13 months.

The mean values of the levels of the urinary GAG was 58.09 ± 8.69 mg/24 hrs, before therapy, 44..93 ± 5.11 mg/24 hrs. after therapy and 15.22 ± 4.15 mg/24 hrs for the controls.

When the GAG levels of the controls were compared with the levels of the psoriatics before therapy, the difference was statistically significant.

(α =0.01, th = 4.89 > t_t = 2.76)

When the GAG levels of the psoriatics before therapy were compared with the levels after therapy, the diference was statistically insignificant.

(α =0.01, th = 1.016 < t_t = 2.96)

The age, sex, course of therapy and the levels of urinary GAG before and after therapy are shown in Table 1.

DISCUSSION

The proteoglycans and glycosaminoglycans of skin represent a group of compounds that are related to one another by common structural characteristics, and were once known and called as mucopolysaccharides. Their names are hyaluronic acid, chondroitin, chondroitin 4-sulfate (chondroitin sulfate-A), chondroitin G-sulfate (chondroitin sulfate - C), dermatan sulfate (chondroitin sulfate-B7, heparin and heparan sulfate.

The proteoglycans and glycosaminoglycans make up the matrix of the dermis and subcutaneous connective tissue with collagen and elastic fibers. The GAG's comprise about 0.1 - 0.3 % of the dry weiht of the skin and are chiefly hyaluronic acid and dermatan sulfate (6).

The functions of the GAG's of skin are not known at present, but it appears that their structure as polyanionic macromolecules may contribute to the maintenance of salt and water balance. They also appear to play a key role in connective tissue metabolism through interaction with cell migration, growth and differentiation (6).

(No)	(Name)	(Sex)	(Age)	(Course of Treatment)	GAG mg. / 24 hour	
					Before Therapy	After Therapy
1	S.G	K	36	3 mth.	20.82	23.47
2	S.P	K	19	2 mth.	51.75	36.75
3	Y.K	E	55	2 mth.	58.95	24
4	M.Ö	E	42	1 mth.	37.17	29.48
5	Ö.Ö	E	38	1.5 mth.	40.69	25.53
6	M.Y	E	56	2 mth.	9	21.64
7	Y.K	E	30	3 mth.	58.95	62.3
8	R.D	K	43	2 mth.	36	39.4
9	E.Ö	E	27	2 mth.	48.36	44.5
10	M.Ç	E	50	1 mth.	106.86	59.64
11	Y.S	K	46	2.5 mth.	120	48.5
12	M.S	K	25	3 mth.	76.7	92.6
13	Ö.P	E	33	3 mth.	119.47	130.72
14	M.B	E	26	2 mth.	53.04	46.24
15	F.K	K	48	2 mth.	33.6	16.14
Mean			38.27	2.13 mth.	58.09 ± 8.69	44.93 ± 5.11

Table 1 : Age, Sex, Course of treatment and the GAG levels before and after therapy.

The pathogenesis of psoriasis is not understood well at present time: Is the pathogenesis limited to the epidermis and dermis, or does it extend to other sites outside the skin?

Some studies of fibroblast cultures suggest a defect of the dermis (4). The increased uptake of 99 m - technetium disphosphonate in the bones of non-arthritic psoriatic patients also points to a widespread abnormality of the connective tissue (5). The abnormal excretion of the urinary GAG's might reflect a catabolism of the connective tissue.

In our study the GAG levels of the psoriatics before therapy showed a statistically significant increase when compared with the healthy controls. Our results were parallel to the previous reports, but not sufficient to explain that the only source of the increased GAG's in the urine were the psoriatic skin (5).

The GAG levels of the psoriatics after therapy were decreased, but this decrease was not statistically significant. This shows that the clearence of the skin lesions is not sufficient to return the increased values of GAGs to the normal levels.

Dermatan sulfate and hyaluronic acid are chiefly found in the dermis, while chondroitin 4 and G sulfate are found in the bone and cartilage (2, 3).

The GAG electrophoresis of the previous studies shows a total increase in the GAG fractions and not only in the dermal ones (2).

According to these results we can assume that, the source of the increased excretion of urinary GAGs of the psoriatic patients in not only limited to the skin; suggesting that psoriasis may be involving the mesenchymal tissues throughout the body. The recurrences of the disease can also be explained by the assumption.

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