II. Clinical problems

STUDY OF THE LEUKOCYTE MIGRATION INHIBITORY FACTOR IN HUMAN GLOMERULONEPHRITIS FROM THE ASPECT OF THE PROGNOSIS

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Key-words: leukocyte migration inhibitory factor — glomerulonephritis — prognosis

The leukocyte migration inhibitory factor (MIF) is a substance produced by sensitized lymphocytes in response to a specific or aspecific mitogen; this substance decreases the motility of the leukocytes in vitro. MIF production is an immune-specific process. It is induced only by those antigens (in our studies the glomerular basal membrane) towards which the host organism displays hypersensitivity. Migration inhibition detectable in response to a specific antigen can be regarded as a laboratory sign of cellular hypersensitivity (5).

The degree of migration inhibition is expressed by the migration index (MI), which is the quotient of the extents of migration of cultures containing and not containing antigen.

In the present work, a study has been made of the prognostic value of the leukocyte MIF in human glomerulonephritis.

Material and methods

The leukocyte migration inhibitory effect of foetal renal antigen was investigated in 141 patients demonstrated by renal biopsy to suffer from glomerulonephritis (6). In connection with the performance and evaluation of the renal biopsy, reference was made to earlier publications (2, 3). Activity obtained with at least one immune-conjugate by direct immunofluorescence histochemistry (antihuman IgG, IgA, IgM, IgE, polyvalent, C_3 complement) was taken as positive, and its absence as negative.

The glomerulonephrites were classified in accordance with the WHO system, on the basis of the evaluation of the renal biopsy sample. The leukocyte migration inhibition was determined with the method of Bendixen (1).

The migration was regarded as positive when the MI was $\leq 0{,}08$. The question of interest was whether the prognosis for the leukocyte migration test (LMT)-positive cases differed from that for the LMT-negative ones.

Results and discussion

40 positive and 101 negative cases were available for the comparison. The most acceptable method (4) seemed to be to choose negative cases identical as concerned histological diagnosis and sex, and as similar as possible from the aspects of age, duration of the disease, degree of proteinuria and renal function, as pairs for the LMT-positive cases.

Table 1

No.	Age (years)	Histology	Observation period (years)	Prognostic score	Immunosuppression treated (+), not treated (—)
1.	40	focal	2	0	+
2.	61	sclerosis	2	0	+
3.	32		9	2	+
4.	25		5	0	+
5.	26		2	2	+
6.	16		2	0	+
7.	36	mesangio-	2	0	—
8.	37	prolif. g. n.	2	—1	+
9.	32		2	2	+
10.	30		2	1	+
11.	45		4	1	+
12.	24		3	1	+
13.	22		5	2	+
14.	18		5	0	+
15.	34		2	—1	+
16.	32		3	0	+
17.	47	mesangio-	2	0	—
18.	46	prolif. g. n. scler	3	0	—
19.	27	IgA nephro-	3	0	—
20.	19	pathy	3	0	—
21.	17		5	0	—
22.	18		3	0	—
23.	18	membrano-	10	—2	+
24.	16	prolif. g. n. I-III	6	—2	+
25.	22		3	1	+
26.	28		4	2	+
27.	19		6	0	—
28.	19		4	1	—
29.	15		2	1	+
30.	25		3	0	+
31.	33	membranous	6	0	+
32.	35	nephropathy	6	0	+
33.	29		2	0	+
34.	33		3	—2	+
35.	50		3	0	+
36.	36		4	0	+
37.	45	Lupus	3	1	+
38.	47	nephritis	4	—1	+
39.	37		6	—1	+
40.	38		4	—1	+
41.	14	min. inter-	2	0	—
42.	21	capill. g. n.	2	0	—

Such pairing could not be performed for the minimal change glomerulonephritis group, as the LMT was positive in all patients here, and every patient underwent remission.

During the observation period, 15 of the 21 pairs took part in immunosuppressive therapy. The course of the disease and the changes resulting from treatment were classified as described by Wiedemann et al. (7). Thus, the following characteristics and numerical values were used:

considerable improvement	(2)
mild improvement	(1)
no essential improvement	(0)
mild deterioration	(-1)
considerable deterioration	(-2)

In the assessment of the condition, the following data were taken into account: blood pressure, oedema (presence or absence), blood picture (anaemia), urinary findings (quantitative protein and sediment), renal function parameters (serum creatinine, endogenous creatinine clearance), histological findings, fundus picture.

If the point values for the LMT-positive and the LMT-negative cases of the pairs are added up separately, a 10-point difference is found in favour of the LMT-positive cases (table 1). In 8 of the 21 pairs the LMT-positive patients received the higher score, in 3 cases the LMT-negative one did so, and in 10 cases there was no difference.

Among the 15 pairs who participated in immunosuppressive therapy, there were 10 pairs the members of which differed with respect to the prognosis: in these 10 pairs, the condition of the LMT-positive patient improved in 7 cases, was unchanged in 2 ones, and deteriorated in one case; in the LMT-negative patients, the prognosis was good in 3 cases, unchanged in 4 ones, and poor in 3 ones. The LMT was always positive in the 8 minimal changes glomerulonephritis patients; they could be influenced well with therapy, i. e. the prognosis was clearly good.

At present, the characteristic clinical (hypertension, nephrotic syndrome), laboratory (restricted renal function, chronically low complement, or possibly high complement) and histological (considerable half-moon formation i. e. crescents in the glomeruli, dense-deposit changes in the basal membrane, linear immunofluorescence-positivity) signs are better known as concerns a poor prognosis.

Our investigations suggest that the presence of cellular hypersensitivity in glomerulonephritis is a favourable indication from the aspect of the course of the disease.

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ИССЛЕДОВАНИЕ ИНГИБИРУЮЩЕГО ФАКТОРА МИГРАЦИИ ЛЕЙКОЦИТОВ ПРИ ГЛОМЕРУЛОНЕФРИТЕ У ЧЕЛОВЕКА С ТОЧКИ ЗРЕНИЯ ПРОГНОЗА

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РЕЗЮМЕ

По методу Бендиксена исследован ингибирующий фактор лейкоцитной миграции у 141 больных с доказанным биопсией гломерулонефритом. Ингибитор лейкоцитной миграции в ответ на специфический антиген рассматривается как лабораторный признак сверхчувствительности клеток. Авторами установлено, что при положительном тесте (миграционный индекс ≤ 0.8) прогноз гломерулонефрита лучше.