

BLOOD HISTAMINE LEVEL AND SERUM IMMUNOGLOBULINS IN HODGKIN'S DISEASE

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According to most investigators Hodgkin's disease is characterized from the immunological point of view by a disturbance of cellular immunity in the form of decreased T-helper and increased T-suppressor lymphocyte functional activity (6, 9, 12). Single authors report also about a humoral immunity disorder in the form of altered immunoglobulin levels, especially during the recidives of illness (2, 4, 10). In consideration of these data histamine role and participation in the pathogenesis of several diseases taking their course with immune system disorders is recently discussed (13). Our studies showed that blood histamine level decreased significantly in Hodgkin's disease relapse but normalized in remission (1, 8). These data demonstrated the necessity and advisability of parallel follow-up of serum immunoglobulin levels in patients with Hodgkin's disease in relapse and remission.

In the present paper the results of a parallel study of histamine and serum IgG, IgA and IgM levels in Hodgkin's disease were discussed. An attempt to evaluate their diagnostic and prognostic significance is made, too.

Material and methods

Blood histamine and serum immunoglobulin levels were determined with 22 patients with mean age 30,5 years (in a range from 19 up to 54 years). 14 patients were in remission and 8 ones with relapse of the illness. The remission was a result of combined chemotherapy (Vincristine, Cyclophosphamide, Natulane, Prednisolone) or radio/chemotherapy. These indexes were studied in 30 healthy individuals of the same age, too. Histamine was spectrophotometrically estimated after the method of W. Lorenz et al. (7). Radial immunodiffusion after Mancini was used for immunoglobulin determination. The data were processed statistically after the methods of variation and correlation analyses.

Results and discussion

The mean blood histamine level was $0,088 \pm 0,007$ $\mu\text{g/ml}$ in remission. It did not differ significantly from that of the control group ($0,072 \pm 0,002$ $\mu\text{g/ml}$ — see table 1 and fig. 1). Histamine levels were higher than the differentiating rate as established by us for remission and relapse with all patients in remission ($0,040$ $\mu\text{g/ml}$) (1). Mean histamine rate was $0,028 \pm 0,005$ $\mu\text{g/ml}$ in relapse. The comparative assessment showed that it was significantly reduced in relation to that of both the controls and the remission patients ($p < 0,001$). Serum globulin levels were studied parallelly in the same groups.

Table 1

Blood histamine and serum immunoglobulins in Hodgkin's disease

	Histamine mg/ml		Serum Immunoglobulins g/l					
			IgG		IgA		IgM	
	\bar{x}	Sx	\bar{x}	Sx	\bar{x}	Sx	\bar{x}	Sx
H-D patients in remission n=14	0,087	0,008	18,13	2,60	2,26	0,40	0,99	0,13
H-D patients in relapse n=8	0,028	0,005	11,06	2,03	1,65	0,57	0,17	0,10
Control group n=30	0,072	0,002	11,51	0,78	2,14	0,02	1,07	0,04

It can be seen on table 1 and fig. 2 that mean IgG rate was $18,13 \pm 2,60$ g/l during remission, i. e. significantly increased as compared with that of the controls ($p < 0,05$). However, IgG reduction in relapse was not statistically reliable in comparison with the control level of this immunoglobulin.

Mean IgA rate was near to that of the controls when remission patients were considered. Its reduction during relapse down to $1,65 \pm 0,57$ g/l was not significant (table 1 and fig. 2).

IgM rate was $0,99 \pm 0,13$ g/l during remission and did not differ from that of the healthy individuals (table 1 and fig. 2). The changes of IgM level were most considerable during relapse of the illness. The mean rate decreased down to $0,17 \pm 0,10$ g/l i. e. about 6 times as compared with that of the controls ($p < 0,001$). 5 of the total of 8 patients in relapse showed zero values. Other authors reported similar data (2, 4, 10). According to them IgM reduced significantly in patients with dissemination of the process.

The comparison of the data concerning histamine and serum immunoglobulin levels showed an unidirectionality of the changes during remission and relapse. Histamine, IgA and IgM were near to the levels of the controls when remission was concerned. Only IgG levels were slightly increased. All indexes are lower than the control values during relapse. This reduction was especially well expressed and statistically significant when histamine and IgM levels were concerned, with 62 per cent and 84 per cent, respectively. It was to be noted that these indexes had their lowest rates in patients in preterminal state. There existed a moderate direct correlation between both indexes ($r = 0,39$).

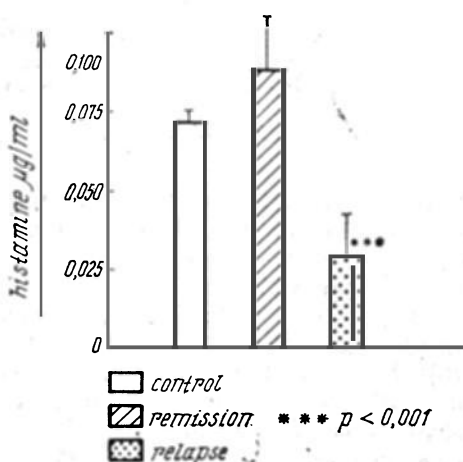


Fig. 1. Blood histamine level in patients with Hodgkin's disease

At this stage of investigation it was difficult to interpret the established interrelation between histamine and IgM reduction during relapse of the disease.

The restoration of IgA and IgM levels in remission up to that of the healthy persons, as well as IgG level increase could be in relation with lymphocyte count

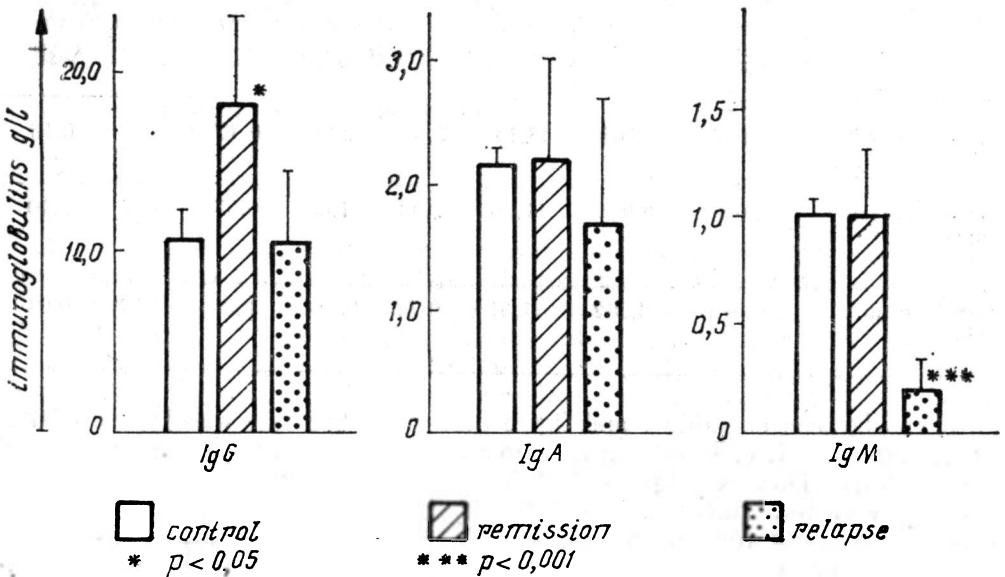


Fig. 2. Serum immunoglobulin levels in patients with Hodgkin's disease

increase at this state as compared with that of the active stage of the illness that was observed by F. Herrmann et al. (5). Besides, these authors reported B-cell population augmentation above the control values and a slighter increase of T-helper lymphocyte number.

According to literature data available (11) histamine exerted, probably, a modulating function similar to that of T-suppressor cells through which it could control the immune response. Furthermore, histamine activity was related with immunological reactivity in immune disorders (13). E. Berényl et al. (3) established that the amount of both T-cell subpopulations of peripheral T-lymphocytes increased significantly in Hodgkin's disease patients during relapse. The first one was with IgG Fc-receptors and the second with histamine receptors. Each subpopulation produced a suppressor substance. It was likely that the increased suppression activity of these two T-cell subpopulations was responsible in the first place for the disturbance of the primary immune response manifested with predominant IgM reduction.

It could be assumed, on the other hand, that the disorder of immunological reactivity in Hodgkin's disease was related with an increased histamine turnover which determined this monoamine diminution in this sickness during relapse as we have already established. Reduced blood histamine and IgM levels could be used in complex with other appropriate indices as prognostic criteria.

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УРОВЕНЬ ГИСТАМИНА КРОВИ И СЫВОРОТОЧНЫХ ИММУНОГЛОБУЛИНОВ ПРИ БОЛЕЗНИ ХОЧКИНА

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РЕЗЮМЕ

Проведено параллельное исследование уровня гистамина крови, а также уровня иммуноглобулинов — ИгГ, ИгА и ИгМ у больных болезнью Хочкина во время рецидива и ремиссии заболевания. Установлено, что во время рецидива стоимости всех показателей, принятых в исследовании, ниже стоимостей тех же показателей у здоровых лиц в контрольной группе. Следует подчеркнуть, что наиболее выраженным и статистически значимым является понижение уровня гистамина и ИгМ — соответственно на 62 % и 84 %. При ремиссии и стоимости гистамина, ИгА и ИгМ близки к тем же стоимостям у здоровых лиц, а стоимости ИгГ несколько повышены. Обсуждается возможность использования показателей уровня гистамина крови и ИгМ (в комплексе с другими показателями) в качестве диагностических и прогностических критериев при рецидиве заболевания.