

Department of Allergology, Karolinska Institutet,
S-10401 Stockholm, Sweden.

THE RELEASE OF HISTAMINE
FROM BLOOD CORPUSCLES
BY ANTIGEN-ANTIBODY REACTIONS

III. *The Histamine Release from Whole Blood
before and after Treatment of Pollen Allergic Patients
with Staphylococcus Vaccine*

By

GUNNAR BERGQUIST & ÅKE NILZÉN

Histamine release (HR), especially from the corpuscular element of the blood, on addition of allergen in *in vitro* experiments has attracted great interest in recent years (5, 8, 10). In some works data are given which indicate that the HR value, before and after treatment of pollen-allergic persons with causal allergen extract, correlates well with the clinical assessment of the allergen reactivity (1,6,9). When, during treatment, the HR value begins to diminish has not yet been fully elucidated, but apparently a decrease in release occurs after 6 months, which becomes more accentuated after 12 months (7).

It has long been known that hypersensitivity can be reduced by both experimental sensitization and atopic reaction by so-called nonspecific treatment (7). For "nonspecific desensitization" different agents have been used, such as the injection of peptone, tuberculin, sulphur and bacterial vaccines. When using bacterial vaccines—both general vaccine stock vaccine and autovaccine—immunization has been expected in order to decrease the infections frequently found in asthma, espe-

cially of the so-called intrinsic type. Reports indicate that a therapeutic effect has been obtained (2, 3, 4).

Since we found that staphylococcus vaccine has a therapeutic effect on vasomotor rhinitis, it seemed reasonable to investigate whether such a vaccine could influence other forms of nasal catarrh of a hypersensitive nature with a known allergen, without carrying out hyposensitization with the causal allergen. In order to objectively record any possible changes in the allergic pattern a histamine-release test was performed according to the method previously described (5).

MATERIAL

As the above-mentioned method for histamine release has been thoroughly tested with pollen as allergen, patients suffering from pollen allergy were chosen. None of the 18 patients, aged between 15 and 30 years, had previously been given any specific or nonspecific antiallergic treatment. All the patients were subjected to skin tests, and conjunctival reaction was induced with birch and timothy pollen extract respectively. Skin tests with staphylococcus aureus vaccine were performed with intracutaneous injection of 0.02, 0.05 and 0.1 ml of a solution containing about 30,000 staphylococcus aureus per ml. Both the immediate and the late reactions were negative.

After this the treatment was begun, during the nonpollen season, with doses increasing from 30,000 bact./ml. to 3 million/ml. The injections were made subcutaneously once a week and the dosage was 0.1, 0.2, 0.4 and 0.6 etc. up to 1 ml. of each concentration, i.e. samples containing 30,000 bact./ml., 300,000 ml. and 3 million/ml. One part of the patients were treated from November—April 1968–69, and another part from November—April 1969–70.

RESULTS

Table 1 presents the material and the test reactions, HR values and clinical results. The clinical evaluations were made by the same physician, and were assessed from symptom-free = 100 per cent to insignificant discomfort = 75 per cent. Only the nine patients treated in 1968–69 could be assessed from a clinical point of view.

As is evident from this table and Table 2 shows the variance analysis that the treatment resulted in a statistically significant ($P < 0.05$) decrease in the HR value. The skin tests perform-

TABLE 1

Patient	HR-value before treatment	Skin and eye test	HR-value after treatment	Skin and eye test	Clinical results %
L. V. 230510 B	0.014	+++	0.002	++	100
L. V. 230510 T	0.044	++++	0.026	++	100
Ö. P. 490917 T	0.018	+++	0.018	+++	75
G. J. 420703 T	0.057	+++	0.019	++++	100
A. J. 540515 T	0.001	+++	0.003	++++	75
A. H. 440113 T	0.005	+++	0.000	+++	100
Ö. L. 530105 B	0.020	+++	0.039	+++	100
L. K. 490424 T	0.001	+++	0.007	+++	100
A. S. 461116 T	0.028	+++	0.017	+++	75
S. H. 520306 B	0.056	+++	0.009	+++	—
S. H. 520306 T	0.010	+++	0.004	+++	—
T. A. 500117 B	0.018	+++	0.014	+++	—
W. S. 410808 T	0.048	+++	0.036	+++	—
T. A. 500117 T	0.010	+++	0.005	+++	—
R. B. 451120 T	0.014	+++	0.000	+++	—
V. L. 551110 B	0.017	++++	0.001	+++	—
V. L. 551110 T	0.017	+++	0.017	+++	—
V. E. 510105 T	0.013	+++	0.001	+	—

TABLE 2

	d. f.	Mean squares	F	P
Between "before" and "after"	1	0.000832	7.43	0.05-0.01
Between patients	17	0.000348	3.11	0.01
Error	17	0.000112	—	—
Totals	35			

Before treatment: 0.0217.

After treatment: 0.0121 (= 55.8 %).

ed before and after treatment showed either no variation or only slight variation before and after treatment, whereas the clinical assessment showed a very good therapeutic effect on the patients who went through the 1969 pollen season, this was on a par with the specific treatment. It is not possible to know if the results persist at the time of writing.

DISCUSSION AND SUMMARY

In the present, preliminary report it can only be stated that treatment with staphylococcus antigen for 6 months causes a decrease in the histamine release from whole blood to serum after incubation with pollen extract of the season, and that a clinical result was obtained, i.e. the same phenomenon as was observed on treatment with the causal allergen. It is too soon to speculate about the cause of these observed effects, since the control material and other experimental data are not yet ready for publication.

←
HR-value = amount of histamine in incubated blood minus control without pollen incubation.

T = timothy pollen, B = birch pollen. Results: 100 per cent, 75 per cent, 50 per cent no improvement = 0.

— = did not go through new season.

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