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Effect of Irradiation and Alkoxyglycerol Treatment on the Formation of Antibodies After *Salmonella* Vaccination

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Effect of Irradiation and Alkoxyglycerol Treatment on the Formation of Antibodies After *Salmonella* Vaccination

The alkoxyglycerols have proved to be of medical interest[1-3]. To some extent they prevent leucopenia and thrombocytopenia. The administration of alkoxyglycerols to patients with cancer of the uterine cervix results in higher survival rates than if radiation treatment alone is given[1,3]. Furthermore the alkoxyglycerols promote the growth of *Lactobacillus lactis*[1].

The body's ability to react against cancer cells that are not eliminated by radiation treatment could possibly depend upon an immunological process. In this context it would be relevant to know whether the capacity for forming antibodies after a vaccination can be influenced by treatment with alkoxyglycerols. Consequently 54 patients with cancer of the uterine cervix were vaccinated

Table I. Comparison of serological reactions in deceased and survived patients

Antigen	Deceased within 3 years						Survivors after 3 years					
	Controls (No. of deceased: 15)		Alkoxyglycerol treated (No. of deceased: 6)		Controls + alkoxyglycerols ($n = 21$)		Controls (No. of survivals: 13)		Alkoxyglycerol treated (No. of survivals: 20)		Controls + alkoxyglycerols ($n = 33$)	
	Effect	No effect	Effect	No effect	Effect	No effect	Effect	No effect	Effect	No effect	Effect	No effect
H	12	3	4	2	16	5	11	2	19	1	30	3
BH	3	12	5	1	8	13	8	5	13	7	21	12
AH	10	5	4	2	14	7	11	2	17	3	28	5
O	10	5	4	2	14	7	6	7	13	7	19	14
CO	11	4	4	2	15	6	9	4	15	5	24	9
BO	4	11	5	1	9	12	12	1	15	5	27	6
Total	50	40	26	10	76	50	57	21	92	28	149	49
Per patient	3.3	2.7	4.3	1.7	3.6	2.4	4.4	2.4	4.6	1.4	4.5	1.5

against typhus-paratyphus (TABC) on the day before and the day after implantation of radium. Every second patient was given alkoxyglycerols (0.3 g per day) immediately after the first vaccination. Samples for serological analysis (Widal's reaction) were taken before the vaccination and about 3 weeks later before the second implantation with radium. The alkoxyglycerol treatment was continued throughout the interval between the 2 samples. The agglutination effects for different antigens were determined for all patients. When demonstrating agglutinines against *Salmonella* antigens, 3 O-antigens and 3 H-antigens were examined. Each serological analysis thus comprises 6 agglutination reactions. The number of responses with an effect and without an effect was calculated for each patient and totalled for the entire group. The survival time was also recorded.

In order to distinguish between different effects, the material has been presented in different ways. Table I shows for the 6 antigens the sum of reactions with and without effects for patients who died within 3 years and survivors after 3 years. In both groups data are given on the number of reactions with and without an effect for the control group, the alkoxyglycerol group and the 2 combined.

Table II. Comparison of serological reactions in controls and alkoxyglycerol group

Antigen	Control group (No. of patients: 28)		Alkoxyglycerol group (No. of patients: 26)	
	Effect	No effect	Effect	No effect
H	23	5	23	3
BH	11	17	18	8
AH	21	7	21	5
O	16	12	17	9
CO	20	8	19	7
BO	16	12	20	6
Total	107	61	118	38
Per Patient	3.8	2.2	4.5	1.5

The patients who died within 3 years ($n = 21$) have 50 reactions without effect (2.4 reactions without effect per patient). The survivors after 3 years ($n = 33$) have 49 reactions without effect (1.5 reactions without effect per patient). This difference between reactions without effect for deceased and survivors is statistically significant ($P < 0.01$). Thus the surviving patients had a greater ability to form antibodies against TABC.

Table II gives the serological reactions for the control and alkoxyglycerol groups without distinguishing between deceased and survivors. It will be seen from the table that the formation of antibodies occurs to a greater extent in the patients who received alkoxyglycerol treatment. The number of agglutination effects per patient is given in Table II for the 2 groups. The difference between them is statistically significant ($P < 0.02$).

Résumé. La formation des anti-corps après vaccination contre le typhus et le paratyphus est plus marquée chez les malades qui survivent que chez ceux qui sont décédés au cours des 3 années de traitement. Elle est aussi plus marquée dans le groupe ayant reçu des alcoxyglycéroles avant et après radiation que dans celui qui a subi seulement la radiothérapie.

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