Effects of Cortisone and ACTH Therapy on Eosinophils of the Bone Marrow and Blood. (18325)

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(Introduced by W. Antopol.)

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Recent reports have shown that cortisone and ACTH decrease markedly the number of eosinophils in the peripheral blood(1-3). The importance of this finding is reflected in the extensive use of this response as a guide to the therapeutic effectiveness of both cortisone and ACTH(2). Aside from its relation to adrenal cortex function(4), the mechanism of the eosinopenia is at present unknown. The effects of cortisone and ACTH on the eosinophils of both the bone marrow and peripheral blood are reported herein.

Methods and procedure. Eosinophil counts were performed on bone marrow and peripheral blood obtained from patients with non-hematological diseases. The counts were done according to the propylene glycol-phloxine method described by Randolph(5). The studies were carried out before and during therapy, administered according to the therapeutic requirement.* Six patients received cortisone and 1 received ACTH. The amount of bone marrow aspirated from the sternum was slightly in excess of 0.1 cc in order to supply sufficient material for both eosinophil count and slide preparations. The peripheral blood counts were performed on blood from the finger tip, obtained a few minutes prior to sternal puncture.

Results. The eosinophil counts of the peripheral blood and bone marrow before and during therapy are shown in Table I. All 7 subjects showed significant decreases varying from 64 to 100% in the blood esosinophil counts after cortisone or ACTH therapy whereas the bone marrow eosinophilic cell counts showed consistent increases ranging from 42 to 372%. Differential cell counts of the bone marrow showed no significant alterations after therapy.

Discussion. It is apparent from these results that at the time of marked reduction in the peripheral blood eosinophils during cortisone or ACTH therapy, there is no decrease in

TABLE I. Eosinophil Counts of Blood and Bone Marrow of 7 Patients Before and During Either Cortisone or ACTH Therapy.

Subject	Sex	Age	Diagnosis	Drug	Day of therapy studied	Total dose, mg	Blood eosinophil count (per cu mm)			Bone marrow eos. count (per cu mm)		
							Before therapy	After therapy	% change	Before therapy	After therapy	% change
A.G.	F	68	Rheum. arthritis	Cortisone	12	1100	81	30	— 64	3440	16250	+372
L.G.	F	35	" "	"	12	200	198	69	— 65	1469	2600	+ 76
A.Y.	F	57	" "	"	7	1000	22	0	—100	406	575	+ 42
P.K.	F	26	" "	"	7	1000	106	25	— 77	656	1965	+198
A.H.	M	59	" "	"	7	1000	500	120	— 76	1750	3049	+ 74
H.D.	M	45	Regional ileitis	"	6	1600	75	0	—100	731	1275	+ 74
B.G.	M	54	Rheum. arthritis	ACTH	4	240	131	6	— 95	837	1435	+ 71

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* These patients were treated by Dr. Jack Dordick.

the number of eosinophilic cells in the bone marrow. This is in accord with the observation that cortisone administration does not produce any diminution in eosinophils in the femoral marrow of mice(6).

The apparent increase in the eosinophilic cells of the bone marrow indicates that cortisone and ACTH may inhibit delivery of eosinophils from the bone marrow to the peripheral blood. However, the differential counts indicate no significant alteration in the percentage of the eosinophilic cells in relation to the nucleated cells of the bone marrow. It appears most probable that cortisone and ACTH increase the rate of removal of eosinophils from the blood without affecting their production by the bone marrow.

Summary. Eosinophil counts were performed on blood and bone marrow of 7 patients before and during either cortisone or ACTH therapy. At a time of marked diminution in the eosinophils of the peripheral blood, the eosinophilic cells of the bone marrow were not decreased.

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Influence of Tumors on Liver Concentration of Radioactive Stilbamidine.* (18326)

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During the course of studies with radioactive stilbamidine, certain findings have appeared that are of sufficient interest to warrant a preliminary report. Kopac(1) reported that stilbamidine destroyed the neoplastic cells in cultures of rat mammary adenocarcinoma and transplanted lymphosarcoma. Snapper(2) further studied this drug and found inclusion bodies containing stilbamidine in the cytoplasm of plasma cells in patients with multiple myeloma. Accordingly, C^{14}-labeled stilbamidine was prepared and its metabolic distribution in normal mice and a patient with multiple myeloma was undertaken(3,4). These experiments established that the oxidation to $C^{14}O_2$ of stilbamidine by the body is negligible.

These studies suggested the possibility of investigating the localization and distribution of activity in mice with various types of tumors. Accordingly, normal and tumor bearing mice were injected intraperitoneally with 0.4 mg (4.50×10^6 dis/min) of stilbamidine-$C_2{}^{14}$ dissolved in 0.05 ml saline. The C^{14}-labeled stilbamidine used for this experiment was synthesized by Dr. J. C. Reid(5).

Procedure. Ninety-six hours after injection, the mice were killed with ether and autopsied. Liver, spleen, kidneys, pancreas and tumors were removed, dried in vacuum, weighed and burned over copper oxide and the resulting carbon dioxide was converted to barium carbonate and the radioactivity measured with a proportional counter(6).‡ The mice were kept in separate cages designed to prevent contamination of food and water with excreta.

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