The appearance of bound antibodies in the intestinal epithelial cells after exposure to live vibrios is of significance because it provides evidence for the importance of local immunity in protection against cholera. Since in cholera the causal vibrios multiply and remain limited in the intestinal lumen, an antibacterial immune mechanism, if it is to be effective, has to operate at the lumenal surface of the mucous membrane lining the intestine. This in fact appears to be the case from the present results.

The cell-bound antibody liberated on cytolysis of the epithelial cells shed into the lumen – a process of known rapidity in the intestine – may form part of the copro-antibody detectable in the lumenal secretions and faeces, and thought to be the main protective factor in cholera[13].

Zusammenfassung. Mit Hilfe der Fluoreszenzmikroskopie lassen sich zellgebundene Immunkörper in isolierten Darmepithelzellen erwachsener Kaninchen nach Darmimpfung mit lebender Kultur des *Vibrio-eltor*-Stammes erkennen. Immunkörper waren in den Epithelzellen nicht immunisierter Kaninchen nicht nachweisbar. Es wird die mögliche Rolle der zellgebundenen Immunkörper beim antibakteriellen Immunmechanismus (Schutz gegen Cholera und Ansteckungsort) diskutiert.

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The Effect of Radiothyroidectomy on Blood Volume, Red Cell Survival and Iron Kinetics in Puppies

The influence of thyroidectomy on erythropoiesis in the dog is well documented. In the studies most carefully done[1,2] ablation of the thyroid by surgical procedures or destruction of the gland by administration of radioiodine (I^{131}) produced anemia and a striking decrease in the red cell renewal rate without change in red cell survival. These studies were done in adult animals and since in general the earlier thyroid insufficiency appears the more far-reaching the effects, at least on some organ systems, the present study was designed to investigate the influence of thyroid destruction on the erythropoietic system in the new-born dog.

Six mongrel 3-week-old dogs of both sexes of the same littermate were used throughout. 3 of them were injected with 1 mc/kg body weight of sterile sodium radioiodine (I^{131}) i.p. while the remaining 3 served as normal controls. The puppies were then left unmolested and determinations of peripheral hemoglobin concentration, blood volume, red cell survival, and plasma and red cell iron turnover rates were performed in each dog 1 year later. The total red cell volume and apparent red cell survival *tl/2* were determined with radiochromium as previously described[3]. Plasma and red cell iron turnover rates were measured by the method of HUFF et al.[4]. Hemoglobin concentration was determined by the cyanmethemoglobin method and hematocrits were done by micromethod. Plasma iron was measured by the method of PETERS et al.[5].

The results obtained are presented in the Table. The mean hemoglobin concentration was 13.8 g/100 ml and the mean hematocrit 44.5% in the normal dogs. Both values showed an approximately 32% decrease in the thyroidectomized ones. The total circulating red cell volume was decreased 27% from the mean control value of 36.1 ml/kg body weight to 26.3 ml/kg in the thyroidecto-

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Hematologic data from normal and thyroidectomized dogs

	Normal	Thyroidectomized	% change
Body weight, kg	15.7 ± 0.1[a]	9.1 ± 1.3	– 42
Hemoglobin concentration, g/100 ml	13.8 ± 0.1	9.4 ± 0.2	– 32
Hematocrit, %	44.5 ± 0.1	30.5 ± 0.5	– 31
Red cell volume, ml/kg body weight	36.1 ± 2.8	26.3 ± 0.2	– 27
Plasma volume, ml/kg body weight	49.8 ± 3.8	66.2 ± 1.3	+ 33
Blood volume, ml/kg body weight	85.9 ± 6.7	92.5 ± 1.1	+ 8
Plasma iron, μg/ml	1.02 ± 0.1	0.97 ± 0.1	– 5
Plasma Fe^{59} half life, min	47.0 ± 3.0	106.0 ± 1.0	+ 126
Plasma iron turnover rate, mg/kg per day	1.08 ± 0.2	0.61 ± 0.1	– 44
Red cell iron utilization, %	75.0 ± 2.1	73.0 ± 2.0	– 3
Red cell iron turnover rate, mg/kg per day	0.81 ± 0.1	0.45 ± 0.1	– 45
Cr^{51} *tl/2*, days	24.0 ± 2.2	24.6 ± 2.9	–

[a] S.E. of the mean.

mized dogs. The mean plasma volume was 33% increased in these animals and, therefore, the blood volume showed an 8% increase. This marked increase of the plasma volume is the cause that the 'thyroidectomy anemia' in the dog is more severe when evaluated from peripheral indices than when considered in terms of the total red cell volume. The rate of erythropoiesis measured by the red cell iron turnover rate decreased after thyroid destruction, as it is shown in the Table. The magnitude of the decrease in the hemoglobin synthesis rate was about 45% of the control value. A comparable decrease in plasma iron turnover rate was found. The clearance half time of radioiron from the plasma was prolonged in the thyroidectomized dogs when compared to the normal ones. The thyroidectomized animals had normal erythrocyte life spans as measured with Cr^{51}.

The data presented above are very close with those previously reported by us in adult dogs[1] and suggest that there is no correlation between the time when thyroid insufficiency appears and its effects on the erythropoietic system.

Anemia in the thyroidectomized dog appears to result from a diminished rate of red cell production rather than from an accelerated rate of red cell destruction, as it is suggested by the findings of (1) a normal erythrocyte life span, (2) a prolongation of the clearance half time of radioiron from the plasma beyond the range for the normal dog, and (3) a marked reduction in plasma and red cell iron turnover rates. Therefore, the 'thyroidectomy anemia' in the dog may be included among the 'non-proliferative anemias' and probably due to a decreased marrow stimulation[6].

Resumen. Cachorros radioyodotiroidectomizados a las 3 semanas de vida mostraron un descenso del 32% en la concentración de hemoglobina y el valor hematocrito. El volumen de la masa roja circulante disminuyó un 27% y el volumen plasmático mostró un aumento del 33%. La sobrevida de los eritrocitos no fue afectada por la tiroidectomía. La magnitud de síntesis hemoglobínica disminuyó en un 45%. Estos resultados indican 1) que la influencia de la tiroidectomía sobre el sistema eritropoyético es independiente del período de la vida en que se la realiza, y 2) que la anemia post-tiroidectomía puede ubicarse entre las anemias no proliferativas, siendo su causa probablemente un descenso de la estimulación eritropoyética.

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Changes in Protein Metabolism in Proliferating and Non-Proliferating Human Acute Leukaemia Cells Treated with Actinomycin-D

Since actinomycin-D blocks the synthesis of DNA-dependent RNA's, messenger RNA stability can be determined via post-actinomycin variations in protein synthesis. Many mammal cells, including those of the normal human haemopoietic series, display notable protein stability and this fact indicates similar stability on the part of their messenger RNA's[1–15]. A rapid fall to 50% of starting values within 2 h, on the other hand, has been observed when actinomycin-D is added to acute leukaemia blasts[16]; it would seem, therefore, that these blasts are incapable of synthetizing the so-called 'stable' messenger RNA's present in differentiated blood cells[6,12].

The acute leukaemia population contains both a proliferating and a non-proliferating component[17,18], whose protein synthesis behaviour in the presence of actinomycin-D may give evidence of relationships between proliferative activity and RNA metabolism in acute leukaemia blasts. The present paper is concerned with the rate of protein synthesis in proliferating and non-proliferating human acute leukaemia cells incubated with actinomycin-D as a means of assessing the stability of their RNA's.

Materials and methods. Our series consisted of 4 cases of acute myeloblastic leukaemia (cases 1–4), 1 case of acute lymphoblastic leukaemia (No. 5), 1 case of acute

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