

tograms were obtained in the following manner: 0.12 gms. sodium tetraiodophthalein per kilo body weight were injected intravenously. Eighteen hours after the injection of the dye, the first X-ray film was taken. Then the dogs were fed with the yolks of 3 eggs in 200 cc. of cream⁴ and films were taken at intervals of 1, 3, 6 and 24 hours after the meal.

In both dogs, the shadow was normal in size and density at the 18th hour observation. Following the meal, in one dog, there was progressive shrinkage and increased density of the shadow, with complete disappearance at the 24 hour period. In the other dog, there was only a slight decrease in the size of the shadow, but there was a definite diminution in density, most marked after 6 hours; after 24 hours the shadow was still present. These findings are within the normal variations for dogs.

From the above it would appear that normal cholecystograms may be obtained in dogs after division and transplantation of the common duct. This excludes a reciprocal relationship between the sphincter of Oddi and the gall-bladder as promulgated by Meltzer.⁵

¹ Burget, G. E., *Am. J. Physiol.*, 1926, lxxix, 130.

² Copher, G. H., and Kodama, S., *Arch. Int. Med.*, 1926, xxxviii, 647.

³ Graham, E. A., Cole, W. H., and Copher, G. H., *J. Am. Med. Assn.*, 1925, lxxxiv, 1175.

⁴ Boyden, E. A., *Anat. Rec.*, 1925, xxx, 333.

⁵ Meltzer, S. J., *Am. J. Med. Soc.*, 1917, cliii, 469.

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Changes Observed in Epidermal Cells Covering Myxomatous Masses Induced by Virus Myxomatosum* (Sanarelli).

T. M. RIVERS. (Introduced by O. T. Avery.)

From the Hospital of the Rockefeller Institute for Medical Research.

Sanarelli,¹ in 1898, described an infectious myxoma indigenous to rabbits of South America. The characteristics of this disease have led investigators to classify it with the so-called filterable virus diseases. Tumor-like masses appear quickly at the site of inoculation, and later at various other points in the subcutaneous tissue, as well as in the lymph nodes and spleen. The disease is extremely malig-

* This virus became available for study through the kindness of Dr. C. E. Simon and Dr. A. Carrel.

nant and usually kills rabbits within 7 to 15 days. Mammals and fowls that have been tested, with the exception of rabbits, have been found to be refractory to infection with the virus. No one has succeeded in cultivating the etiological agent on artificial media.

The tumors, upon macroscopic and microscopic examination, present the picture observed in myxomas. At the same time, however, evidences of a severe inflammatory reaction are seen, *e. g.*, collections of polymorphonuclear leucocytes and other types of cells. Frequently the tumors do not appear unlike some of the myxomatous growths seen in chickens. Intracellular changes have also been observed and recorded. Splendore,² in 1909, stated that trachoma-like bodies occurred in affected cells. In 1911, Moses³ reported that he was unable to demonstrate inclusions similar to the ones seen in trachoma. Aragao,⁴ in 1911, described round bodies of uniform size in the hypertrophic nuclei of cells in the myxomatous masses. He thought that these bodies underwent division and represent the virus itself.

The point of particular interest concerning the myomatosis of rabbits and the occasion for the present paper is the fact that both epithelial tissue and connective tissue are affected. On the one hand, there seems to be a proliferation of certain cells within the connective tissue, while on the other, a destruction of epithelial cells is occurring. At the present time the changes observed in the epidermis will be described.

Rabbits were anesthetized at different times after infection, and small pieces of diseased skin were removed, fixed in Zenker's fluid plus 5 per cent acetic acid, sectioned, and stained with eosin and methylene blue.

Upon microscopic examination the first change noted in the epidermal cells is an increase in their size. Then small, pink, granular areas appear in the cytoplasm. These areas rapidly increase in size and frequently involve most of the cytoplasm. In the center of the acidophilic masses, blue, round or rod-shaped bodies are often seen. The cytoplasmic bodies in many respects resemble the Bollinger bodies found in cells affected by the virus of contagious epithelioma of fowls. The disease process in the epidermal cells progresses until there is a complete dissolution of the cells. At this time distinct vesicles appear in the epidermis, which are not unlike the ones encountered in virus diseases that usually attack the skin, *e. g.*, *herpes simplex*. The nature of the acidophilic masses in the epidermal cells described above is as poorly understood as is the nature of any of the inclusions that are associated with many other virus diseases.

Interest in the Rous chicken tumors has led to discussions in regard to their importance in the general study of malignant growths. The same questions propounded concerning the nature of the chicken tumors will undoubtedly be raised in regard to this rabbit myxoma. Although in this disease of rabbits there are myxomatous growths, the disease picture as a whole more closely resembles infectious processes than it does neoplastic ones. This difference is emphasized by the highly contagious nature of the rabbit disease, a condition never recorded in regard to chicken tumors. The fact that the pathological picture in the epidermis differs so much from the one occurring in the subcutaneous tissues makes the rabbit myxoma an extremely interesting disease. Immediately, one might ask whether more than one virus is being dealt with, inasmuch as it has been shown⁵ that some tumors are excellent places for the growth and persistence of certain viruses. This question cannot be answered at the present time.

This is a preliminary report.

¹ Sanarelli, G., *Centr. Bak., Abt. 1*, 1898, xxiii, 865.

² Splendore, A., *Centr. Bak., Abt. 1, Orig.*, 1909, xlviii, 300.

³ Moses, A., *Mem. Inst. Oswaldo Cruz*, 1911, iii, 46.

⁴ da Rocha-Lima, H., v. Prowazek, *Handbuch der pathogenen Protozoen*, 1920, Leipzig, ii, 959.

⁵ Rivers, T. M., and Pearce, L., *J. Exp. Med.*, 1925, xlii, 523.

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Blood Groups Among the Yoruba Tribe of West African Negroes.

HENRY R. MULLER. (Introduced by J. H. Bauer.)

From the Laboratory of the West African Yellow Fever Commission of the International Health Board of the Rockefeller Foundation at Yaba (Lagos), Nigeria, W. A.

The Yoruba tribe of West African negroes, inhabiting the southwestern portion of Nigeria, W. A., is numerically large, consisting, it is estimated, of 2,000,000 individuals. Its members are distinguished by the tribal mark of three parallel horizontal scars on each cheek. Though this tribal marking has been strictly adhered to in the past, the younger generations are not marking their children in all instances, especially in the more cosmopolitan city of Lagos. The presence of these distinguishing marks was used by us to establish the individual's Yoruban descent.