During the course of routine pathological examinations of 9 rabbits injected with relatively large amounts of the dye T-1824 (Evans blue), which is used for the determination of total plasma protein (Gregersen, Gibson, and Stead) and which has also been employed in therapeutic attempts in experimental cancer research (Brunschwig, Schmitz, and Jennings; Duran-Reynals), a bilateral tumor of the adrenals was found in one rabbit. True adrenal blastomas in rabbits are, according to Löwenthal, extreme rarities, as he has seen only a few lipoid-containing cortical adenomas or accessory cortical nodules. Boycott and Pembrey reported a doubtful, round cell sarcoma which allegedly originated from the adrenal from which, however, it was separated by a capsule. The bilateral adrenal neoplasms in the case to be presented are placed on record, as they are apparently the first true malignant adrenal blastomas of cortical derivation which have been observed in the rabbit, and as the occurrence of adrenal tumors in gonadectomized male and female animals has focused special attention on these neoplasms (Hueper and Martin).

The tumors were found in a male rabbit, weighing 2.4 kg., which had been injected intravenously with 3 cc./kg. of an 0.5 per cent Evans blue solution and which was killed approximately 6 months later. The postmortem examination showed that the upper incisor teeth were bluish in color; the testes were blue; the left adrenal was enlarged to about twice normal size and of a peculiar brown color, while the right adrenal was blue and attached to the pancreas and duodenum. The other organs were grossly normal with the exception of the testes, which were small.

The histological examination of the adrenals revealed that the tissue of the left adrenal was placed like a triangular cap upon a small bean-sized mass consisting of huge foam cells containing in places numerous small, oval nuclei (Fig. 1). There were
scattered throughout the intact tumor tissue small slit-like crevices such as result from crystalline cholesterol deposits. The tumor was not demarcated by a capsule from the normal adrenal but merged directly with it. The rather thin fibrous capsule surrounding the other parts of the tumor was in places penetrated by small groups of the large foam cells which invaded the surrounding fat and reticular endothelial fibrous cushions. The liver and duodenum were hyperemic. The spleen contained areas with a thick hyaline network involving mainly the lymph follicles and the surrounding tissue, which contained large multinucleated giant cells often possessing a large vacuole. Similar hyaline matter was present in the renal glomeruli, while large albuminous casts were found in the distended cortical tubules.

COMMENT AND CONCLUSIONS

The bilateral adrenal cortical tumors described are apparently adenocarcinomas derived from adenomas, which, however, have not produced any metastases. They are not tumors of the interrenal type, as the testicular atrophy observed is attributable to a testicular toxic action of the dye injected, as is evident from a more extensive toxicopathologic study of the effects of excessive doses of this dye introduced into dogs, cats, rabbits, and rats (Hueper and Ichniowski). The toxic action of T-1824 accounts also for the other pathological lesions noted in the various organs. It is not likely that the adrenal tumors found in this particular rabbit were directly or indirectly elicited by the toxic action of the dye, as none of the numerous animals of different species treated similarly showed
any signs of a hyperplasia of the adrenal cortex, unless the time necessary for such a development was in general not sufficiently long.

REFERENCES


Carcinoma of the Adrenal Cortex in a Rabbit

W. C. Hueper and C. T. Ichniowski