cut. Electrocardiograms were taken in this position and also after inversion of the animal.

When the dog was on its back with the heart against the spine we usually confirmed Lewis'[1, 2] observations. By inverting the dog, which allowed the heart to return to its more nearly normal position, complete reversal of the usual type of extrasystoles and bundle branch block was obtained.

These results suggest that the different findings obtained by Lewis in the dog and by Barker in the human can be explained by the position of the heart in the thorax. Due to the deep anterior posterior diameter of the chest in the dog the heart falls from its normal anterior position when the pericardium is opened, a change which is not mechanically possible in the relatively shallow mediastinum of man.

7244 C

Effects of Ergotamine, Adrenalin, Atropine, and Calcium on Thyroid Gland of the Guinea Pig.*

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Because of the relations of the autonomic nervous system to the thyroid gland, we thought it of interest to determine the effects of certain drugs which are known or believed to affect the autonomic nerves in a specific manner.

We tested the effect of these drugs in two ways: (1) We either injected solutions of these drugs subcutaneously or intraperitoneally, or administered them orally, and then examined the thyroid gland microscopically, noting the various characteristic features considered in the previous investigations from this laboratory; in particular making approximate counts of mitoses in various glands. (2) We determined the effect of these drugs on the hypertrophy and hyperplasia which is produced in the thyroid by injections of extracts of anterior pituitary gland.

Male guinea pigs, the initial weights of which ranged between 200 and 300 gm., were used for our experiments.

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Experiments with Ergotamine Tartrate (Gynergen). To 8 guinea pigs ergotamine tartrate was given daily for 6 to 9 days in doses varying between 0.5 mg. and 6.0 mg. The drug was administered partly by mouth, and partly by subcutaneous injections. No toxic effects were noted. With the smaller doses there was a gain in weight, but with the larger doses the weight either remained stationary or showed a slight loss. Microscopically the thyroids were those of normal guinea pigs, as far as amount and character of colloid, relative number of mitoses and lack of hypertrophy are concerned.

In 9 guinea pigs, ergotamine and anterior pituitary extract were administered at the same time, 0.1 cc. or 0.3 cc. anterior pituitary extract being injected daily intraperitoneally, for periods of 6 or 9 days, and simultaneously 5.0 mg. ergotamine being given orally and 0.5 mg. injected subcutaneously. Controls were injected with anterior pituitary extract alone.

No definite differences were found between the thyroids of the animals receiving ergotamine plus anterior pituitary extract and the controls.

Experiments with Adrenalin. In 4 guinea pigs, adrenalin hydrochloride (1:1000) was given intraperitoneally in doses of 0.1 cc. or 0.3 cc. daily for 5 to 9 days. With the 0.1 cc. dose there was a gain in weight, but with the 0.3 cc. doses there was a definite loss in weight. In all cases the gross appearance and the microscopic picture of the thyroids were essentially normal.

In 3 guinea pigs, 0.3 cc. adrenalin hydrochloride (1:1000) and 0.3 cc. anterior pituitary extract were simultaneously injected intraperitoneally daily for 6 and 9 days. There was no marked difference between the activity of the thyroids of animals receiving adrenalin plus anterior pituitary extract and controls injected with anterior pituitary extract alone.

The fatal intraperitoneal dose of adrenalin hydrochloride (1:1000) for a guinea pig, weighing approximately 200 gm., varies between 0.2 cc. and 0.5 cc. Almost immediate death occurred in some of the injected animals, preceded by jumping movements, ataxia, and in several cases there was bleeding from the nose. In several other cases the guinea pigs died after a few daily injections of 0.3 cc. These animals showed extreme weakness and a marked loss of weight.

Experiments with Atropine Sulphate. Atropine sulphate was injected into 9 guinea pigs, in most cases intraperitoneally, but in 2 cases subcutaneously, in daily doses varying between 0.3 mg. and

40.0 mg., for periods of 7 to 10 days. The thyroid of one of the animals which received larger doses showed a marked hypertrophy, and another one a slight hypertrophy. In all other cases the thyroids were normal.

In the guinea pigs in which 36 to 40 mg. atropine sulphate were given daily intraperitoneally, the palpebral fissures became slit-like within a short time and the eyes watered considerably. For a guinea pig weighing about 200 gm., approximately 40.0 mg. atropine sulphate injected intraperitoneally represents a toxic dose.

Ten guinea pigs received daily subcutaneous injections of 30 or 40 mg. atropine and simultaneous intraperitoneal injections of 0.3 cc. to 1.0 cc. of anterior pituitary extract. Atropine did not noticeably influence the hypertrophic changes produced by the extract.

Experiments with Calcium Gluconate. Calcium gluconate was injected intraperitoneally into 4 guinea pigs in doses of 0.2 gm. daily for 7 and 11 days. Grossly and microscopically thyroids as well as parathyroids appeared normal.

Ten guinea pigs received simultaneous daily injections of 0.1 cc. or 0.3 cc. anterior pituitary extract, and 0.2 gm. calcium gluconate. In 2 cases the calcium gluconate was administered orally, in 2 cases subcutaneously, and in all other cases intraperitoneally.

The thyroids of the animals receiving calcium did not appreciably differ from the thyroids of controls injected with anterior pituitary extract alone.

We may therefore conclude that (1) ergotamine tartrate (Gynergen), adrenalin hydrochloride, atropine sulphate, and calcium gluconate, which are known or believed to act in a specific manner on the autonomic nervous system, have no appreciable effect on the thyroid gland of the male guinea pig with the doses used; and that (2) these substances when given in conjunction with extracts of anterior pituitary gland do not noticeably alter the effects of the latter on the thyroid gland of the male guinea pig.