

Age and Sex Differences in Weight of Pituitary Gland in Dogs. (18047)

W. F. HEWITT, JR. (Introduced by Edward J. Van Liere)

From the Department of Physiology, West Virginia University School of Medicine, Morgantown*

Absolute and relative hypophysis weight is greater in the female than in the male adult human(1,2), rat(3,4) and pigeon(5). This difference does not exist before puberty in the human(6), rat(7), and rabbit(8). Indeed, Allanson(9) found no sex difference in either immature or adult rabbits, while in the woodchuck(10) the hypophysis is apparently larger in the male.

The present investigation was undertaken in order to determine the hypophysis weight-body weight (HW/BW) ratios in immature, adult, and aged dogs.

Methods. The dogs in which these ratios were determined had been used for acute studies in intestinal absorption. It was felt that these experiments did not affect the hypophysis.

The dogs weighed from 3.71 to 35.5 kg (mean, 8.89 kg). Fifty-two of the total of 91 dogs weighed from 5 to 9 kg. They were grouped by body weight in order to compare animals of similar size (Table I). While the exact age was not known, dogs whose teeth and genitalia indicated unmistakably that they were immature were classified as puppies.

* Present address: School of Medicine, Howard University, Washington, D.C.

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TABLE I.
Hypophysis Weight-Body Weight Ratios (mg per 100 g body weight) in Dogs.

Group	No. of animals	HW/BW	p*
All puppies	16	86.7	
" adults	75	73.4	0.017
Adult females	45	76.6	
" males	30	67.0	0.014
Female puppies	7	90.6	
Male puppies	9	83.7	1.0
Adults, both sexes, 3.71-7.00 kg	27	80.9	
Same, 10.01-35.5 kg	19	59.7	<0.01
Adults, both sexes, 7.01-10.00 kg	29	75.4	
Same, 10.01-35.5 kg	19	59.7	<0.01
Adults, both sexes, 3.71-7.00 kg	27	80.9	
Same, 7.01-10.0 kg	29	75.4	0.3
Senile	3	49.6	
All adults	75	73.4	0.02

* "p" is probability of chance difference between two means. For statistical significance, "p" must be 0.05 (1 chance in 20) or less(14).

The calvaria was removed, the brain retracted and the hypophysis exposed by transecting the infundibulum flush with the hypothalamus. The gland usually came out of the sella turcica in one piece, the posterior lobe being easily recoverable if it separated. The whole gland was blotted, weighed immediately to the nearest 0.5 mg, and dried to constant weight in an oven at 105°C in order to determine water content.

Results. From Table I it can be seen that the relative hypophysis weight in immature animals is greater (by 18.12%) than that of adults. The mean HW/BW of adult females was greater by 17.06% than that of adult males; there was no significant sex-linked difference, however, in puppies. Significant differences in relative pituitary weight were found between medium and large, and

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between small and large, but not between small and medium dogs. No sex difference was found within any single weight group of adult animals. Although the number of senile animals was small, their relative hypophysis size was distinctly (33.8%) and significantly less than that of adults.

No significant differences were found in water content of the hypophysis (range, 82.25% to 83.88%).

Discussion. The observations of relative hypophysis weights in pups and in adults, as far as sex difference is concerned, confirm those of other workers. Hypophysis weight seems subject to gonadal influence, being increased in the female by estrus(11), pregnancy(10), and the injection of chorionic gonadotrophin, theelin and theelol(12). The hypophysis of the male is not influenced, however, by the administration of testosterone.

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It would be expected, therefore, that the female hypophysis would be heavier.

Constancy of water content of the hypophysis in the several groups suggests that fluid shifts into and out of the gland are not important effects upon its relative weight. It would be of interest to study water content of the hypophysis in estrous females.

Summary. 1. It is confirmed in the dog, as has been shown for other species, that the relative weight of the hypophysis is greater in adult females than in adult males, and that this difference does not exist before maturity. 2. The hypophysis weight-body weight ratio of puppies is greater than that of adult dogs, and in adult dogs decreases significantly with increase in body size. 3. Relative hypophysis weight was smaller in senile than in adult animals. 4. No sex difference in hypophysis weight existed within any weight-group of adult animals. 5. No differences between groups could be detected with respect to water content of the hypophysis.

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Effect of Insulin Hypoglycemia on Eosinophiles and Lymphocytes of Psychotics.* (18048)

SHIH YUAN TSAI, ALENE BENNETT, LAWRENCE G. MAY, AND RAYMOND L. GREGORY

From the John Sealy Memorial Laboratory for Clinical Research and the Department of Internal Medicine, University of Texas School of Medicine, Galveston, Texas.

The adrenal glucocorticoids, essentially the 11-17-oxysteroids, produce a fall in the circulating eosinophiles and lymphocytes(1,2). Eosinophile and lymphocyte counts have been utilized to evaluate the functional state of the adrenal cortex under various conditions of stress. Insulin hypoglycemia is one notable form of stress. An antagonism exists between

insulin and adrenal glucocorticoids(3). Insulin hypoglycemia liberates epinephrine(4,5), which is an effective anterior pituitary-adrenal cortical activator(6,7).

The present report is a study of the effect of insulin hypoglycemia on the eosinophiles and lymphocytes of schizophrenic patients.

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