THE PRESENCE OF IODINE IN THE HUMAN PITUITARY GLAND.

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Many different observations have called attention to the possibility of a relationship between the anterior lobe of the hypophysis and the thyroid glands, and this possibility is supported by their embryologic history. Nevertheless, few attempts have been made to ascertain whether the hypophysis contains the most characteristic chemical constituent of the thyroid, iodine. So far as can be found in the literature the only recorded chemical examinations of the hypophysis for iodine are the following:

In 1896 Baumann1 reported that he had repeatedly examined human pituitaries for iodine, but always with negative results. He does not mention the amount nor the source of his material.

J. Schnitzler2 examined large quantities of human pituitary tissue obtained in the autopsy room of the Pathological Institute of Vienna, using in one analysis 19 grams, and in another 24 grams of fresh substance, which represents about forty glands in one and fifty glands in the other analysis. Using this large amount of material he found evidence of the presence of iodine in both lots. He states that he communicated with Baumann concerning this disagreement in their results, and that the latter ascribed Schnitzler's positive finding to the large amount of material used.

During the same year (1896) I analyzed fourteen hypophyses obtained from the autopsy room of the Cook County Hospital, the total dry weight of which was 1.225 grams. In this material was found, by Baumann's method, an easily demonstrable trace

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1 Baumann: Münch. med Wochenschr., xliii, p. 311, 1896.
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of iodine, sufficient to give a distinct reaction with chloroform, the amount being estimated colorimetrically as 0.05 milligram of iodine.\(^1\)

As far as I can learn the subject was not taken up again for over ten years, until in 1909 Halliburton\(^2\) reported an analysis of 1.2 grams of dry pituitary substance from twenty-two human glands, and of 1 gram of dried ox pituitary substance. In neither sample could any trace of iodine be obtained by Baumann's method. Shortly after, Simpson and Hunter\(^3\) reported the analyses of the pituitary bodies obtained from sheep which had previously undergone thyroidectomy, with the object of ascertaining if the increase in colloid which occurs in the pituitary after removal of the thyroid represents a true compensatory functionating on the part of this organ. Although they used a particularly delicate method of analysis, devised by Hunter, no evidence of iodine could be found.

Summarizing these reports we find that two examinations of animal pituitary substance for iodine gave negative results. Of five analyses of human hypophysis for iodine three were positive (Schnitzler (two samples), Wells) and two negative (Baumann, Halliburton). While as a usual thing positive results have more value than negative results, yet in this particular instance the converse is probably true, because of the presence of a source of error present in the human material. This consists in the fact that a considerable proportion of hospital patients receive iodine in some form, and such therapeutically administered iodine may be readily found in any and all tissues of the body, so delicate are our analytic methods for iodine in small amounts. None of the articles quoted contains any mention of this source of error. I have no record of the source of the material used in my own experiments thirteen years ago, which will permit me to ascertain whether the patients had received iodine or not. Therefore I have recently secured, through the kindness of Dr. T. H. Boughton, resident pathologist of Cook County Hospital, twenty-five human pituitary glands. Of these three were from patients who had

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\(^1\)Wells: Journ. of the Amer. Med. Assoc., xxix, p. 1011, 1897.
received iodides before death, and these three were preserved and analyzed separately. The other twenty-two were from patients who had not received iodine while in the hospital, and they were analyzed together by Baumann's method, no trace of iodine being found. The three glands from patients who had received iodine gave a distinct but barely discernible pink coloration to the chloroform, indicating the presence of a trace of iodine, too small to estimate quantitatively, but presumably not far from 0.02 milligram since this is about the minimum amount that can be detected by this method.

From the results of all analyses of human pituitary substance reported above, it is evident that the presence of iodine as a normal constituent of this organ must be considered as unproved. To decide this point we need analyses of large numbers of glands taken from the bodies of persons who are known not to have received iodine either internally or from surgical dressings for at least some weeks before death. Positive results obtained by Schnitzler and myself may have been due to therapeutic use of iodine, although, until disproved by analysis of more human material, it still remains possible that the hypophysis may at times contain appreciable quantities of iodine independent of its therapeutic administration. It is also desirable to know if the hypophysis may not have a selective affinity for iodine, similar to that of the thyroid, this causing it to be especially abundant in this tissue in patients who are receiving iodine or iodides.
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