CLINICAL OBSERVATIONS OF ENDOCRINE EXOPHTHALMOS*

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THE proper treatment of a given case of endocrine exophthalmos is often difficult and frequently of great consequence to the patient. On the physician's decision whether or not to depress the patient's thyroid activity may greatly depend the condition of the exophthalmos.

This decision cannot be made on the degree of the protrusion alone, and the following article draws attention to a further clinical sign which may help in arriving at it.

It is now generally admitted that the different conceptions of thyrotropic and thyrotoxic exophthalmos are unnecessary and that in endocrine exophthalmos the degenerative and infiltrative changes in the muscles and other tissues of the orbit are essentially the same, whether or not there is obvious over-activity of the thyroid.

The following observations suggest that the degree of orbital change may differ in accordance with changes in thyroid activity.

Methods

The experiment is based on the observation by Birch-Hirschfeld (1930) that, in a normal subject, the globe lies 1–3 mm. deeper in the orbit if the subject changes from the upright to the recumbent position.

Measurements of the degree of ocular protrusion were made in 28 patients attending the out-patient department for refraction, each patient being first in the upright position and then in the recumbent position.

The second measurements were made when the patient had been lying down for 3 minutes.

The instrument used was the Hertel exophthalmometer.

The results in these 28 cases (Fig. 1, overleaf) show a difference of 1–3 mm.

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FIG. 1.—Exophthalmometric readings (mm.) in normal persons, showing the difference between the upright and recumbent positions. White upright, black recumbent. There was a regression of the globe in the recumbent position by 1–3 mm.

A similar procedure was carried out with seventeen patients suffering from thyrotoxicosis and exophthalmos, but without ophthalmoplegia (Fig. 2).

FIG. 2.—Exophthalmometric readings in seventeen patients suffering from thyrotoxicosis and exophthalmos, but without ophthalmoplegia. White upright, black recumbent. The regression of the globe is the same as in normal subjects.

The procedure was repeated in seven patients suffering from exophthalmos and ophthalmoplegia, but with no evidence of thyrotoxicosis, as indicated by absence of struma and a normal basic metabolism rate (Fig. 3, overleaf).

The procedure was repeated in eleven patients with endocrine exophthalmos, who were suffering from ophthalmoplegia, and also thyrotoxicosis, as indicated by struma and increased basic metabolism rate. In all these cases the thyrotoxicosis was being treated with thiouracil (Fig. 4, overleaf).

Results

Birch-Hirschfeld's observation was confirmed, the amount of reduction of ocular protrusion being 1–3 mm. when the subject changed from the upright to the recumbent position. A similar reduction was found in practically all the cases in which thyrotoxicosis (untreated by thiouracil) was present and in which there was no ophthalmoplegia. The subjects in the

FIG. 3.—Exophthalmometric readings in seven patients suffering from exophthalmos and ophthalmoplegia unaccompanied by thyrotoxicosis. White upright, black recumbent. No regression of the globe was apparent.

FIG. 4.—Exophthalmometric readings in eleven patients suffering from exophthalmos and ophthalmoplegia accompanied by thyrotoxicosis. White upright, black recumbent. No regression of the globe was apparent.

two other groups—in both of which ophthalmoplegia was present—did not show the normal difference in ocular protrusion when they changed from the upright to the recumbent position.

Discussion

This method, although much simpler than that described by Copper in his introduction to clinical orbitonometry (Copper, 1948), is apparently effective for its purpose. Copper determined the global displacement obtained by placing weights of 100, 200, 300, and 400 g. on the cornea.

If it can be assumed that the normal displacement of the globe of 1–3 mm. is due to displacement of the fluid and fat content of the orbit, the orbital fat and fluid in cases suffering from thyrotoxicosis without ophthalmoplegia was so little changed as to be normally displaceable. It may also be assumed that the exophthalmos in subjects with ophthalmoplegia, accompanied or unaccompanied with thyrotoxicosis, is due to infiltrations or changes in the orbit so severe as not to permit the displacement of fat or fluid. This method apparently differentiates between “soft” and “hard” orbit. The presence in a case of thyrotoxicosis of a “hard” orbit may be a cautionary sign in treatment with thiouracil or thyroidectomy.

Summary

1. In normal eyes the protrusion of the globe regresses by 1–3 mm. when the subject changes from the upright to the recumbent position. This change can be demonstrated by simple exophthalmometric measurement.

2. This change is found in thyrotoxicosis unaccompanied by ophthalmoplegia.

3. This change is not found in exophthalmos with ophthalmoplegia whether thyrotoxicosis is present or not.

4. The presence or absence of this change may be of some significance in determining the measures to be taken in the treatment of endocrine exophthalmos.

REFERENCES

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