

THE ^AROLE OF THE ENDOCRINE GLANDS IN THE ETIOLOGY AND TREATMENT OF ACNE

PRELIMINARY REPORT

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The interrelation of the endocrine glands and the skin makes an apparent manifestation in a condition which the dermatologist is so frequently called on to treat, and which to my mind has not been coped with in an efficient manner, namely, acne.

During adolescence the entire system is affected by the changes which are occasioned by the introduction into its life of an entirely new phase and character. The appearance of acne at the beginning of this unstable cycle of the life of the human being points strongly toward the veracity of my introductory statement that etiologically the basic factor may justly be looked for in a deranged endocrine mechanism, the poise of which suffers severely by the advent of a physiologic and biochemical change caused by the new processes which were ushered in by the active participation of the gonads in body metabolism.

ENDOCRINE IMBALANCE

In the make-up of the fundamental structure of human economy, the endocrine system correlated by the vegetative nervous system plays an important function—that is, balance of metabolism. When any part of this mechanism is called on by the growing body needs or growing organ needs or by pathologic processes or by toxic influences of chemical, mechanical, bacterial or physical nature for altered activity,¹ an imbalance will result. If this derangement takes place gradually, it may be taken care of by a reestablishment or readjustment on the part of the other endocrine glands, but if the imbalance is so rapid that the other endocrine glands are unable to respond in an efficient way, the body will show visible signs of this metabolic imbalance, which has been newly established.

Some such condition arises when puberty is reached and apparent functioning of the gonads makes this change in both the body and the mind of the person as he matures in sex.

1. Reede, E. H.: The Rôle of the Vegetative Nervous System in Diseases of the Skin, *J. Cutan. Dis.* **36**:505 (Nov.) 1918.

It is generally recognized that gonad activity has a distinct bearing on the endocrine system. Endocrine imbalance at the beginning of puberty and at the menopause in woman depends on the inability of the entire endocrine system to adjust itself and to cope with the advent of a new activity in the first instance and the withdrawal of necessary bodily hormones in the latter case. Sudden changes in either way cause the same marked effect as does the slow and long progressing establishment of gonad function. If one adds to this a slight disturbance of another endocrine gland due to some intercurrent or previous infection or other pathologic condition congenital or acquired, readjustment to the new state becomes a more difficult problem for the burdened body and its constituent endocrine mechanism to overcome or to cope with.

There is a visible manifestation of this beginning gonad action in a response to development in certain physical characteristics both in male and female, and the appendages of the skin play an important part under this new regimen as they are awakened from their quiescent stage. This is amply demonstrated by the appearance of pubic and axillary hairs.

A stimulus so powerful as to actuate these hair follicles may have the same stimulating effect on sebaceous and pilosebaceous glands and may be answered by an increased production of their glandular acidity.² Should this new endocrine change be gradual, and should this new stimulus be slow, the ducts of the sebaceous glands can carry off the increased amount of sebaceous secretion, but if time for the adjustment is not given, the ducts cannot conveniently perform their function, and stagnation results.

Suboxygenation of the tissues may be in a great measure the result of the endocrine imbalance, which the body is unable to accommodate. This lack of oxygenation manifests itself in local hyperemia and congestion, which is also an important factor in stagnation and acne formation.

Every one who is concerned in this medical entity speaks of a peculiar type of skin which is necessary for a suitable soil for the development of acne—the oily, seborrheic skin, which oozes sebaceous secretion, with its sluggish and lazy appearance. Dr. Fred M. Jacobs called it “a sad looking skin,” which is a very appropriate and picturesque description. May this not be taken as a physiologic expression of endocrine imbalance, as the dry skin and hair, the pads of subcutaneous fat are necessary to complete the syndrome of hypothyroidism?

That these overloaded sebaceous glands, periglandular structures and ducts are an easy prey for organisms occurring on the skin can be

2. Sutton, R. E.: *Diseases of the Skin*, St. Louis, The C. V. Mosby Co., 1919, p. 883.

readily perceived, but that this is only a secondary and not the primary part of the pathologic process is a point of great therapeutic importance.

Stagnation in the excretory ducts of the testes and ovaries from lack of physiologic use may also be a determining factor in this endocrine imbalance. I have four cases of acne, all in males, who had distressing vesical symptoms to such a degree that they warranted the seeking of advice from a genito-urinary specialist. In each case an overdistention of the seminal vesicles was found, which on slight massaging evacuated a large abundance of fluid.

I have collected cases of acne in persons between the ages of 30 and 42 years. Each case may be classed in the "unmarried" or, in two instances, in the "widow" social status of more than ten years' standing. What inference may be made from this? Is it merely a coincidence, or is the observation of the late Joseph Zeisler correct, that when normal sexual relation is established, as in the marital state, acne disappears? Or is the mere pelvic irritation which the stagnation causes sufficient, without the involvement of the endocrine system, to produce a hyperstimulation of the sebaceous and pilosebaceous glands to abnormal activity?

To accept the view of endocrine imbalance, that as the patient reaches maturity it tends to adjust itself along physiologic lines, may also explain the self limited character of acne; and the establishment of this balance may be greatly aided by "the establishment of normal sexual relations," of which Joseph Zeisler speaks.

If we accept the acne bacillus as the exciting agent, the removal of the necessary soil for its development will determine its extinction and not the development of any particular type of resistance by the body to overcome the invasion and activity of this organism. I think nature points definitely to treatment of the endocrine mechanism in order to help out this system.

TWO TYPES OF PATIENTS WITH ACNE

The clue to the situation may be obtained from the behavior of general body metabolism. Early in the history of dermatology two distinct types of patients presenting acne were described—the thin emaciated, anemic type and the stouter, full blooded or plethoric type. In each instant there is an endocrine imbalance.

The first type falls into the group of patients who present the well established syndrome of thyroid toxicosis with increase in metabolism as a whole, the rapid burning up of tissues unable to overcome or resist infections and intoxications. This does not mean, however, that certain localized areas of the body may not be suffering from under-oxygenation, such as may occur in the sebaceous glands or in any of

the skin appendages. The second type is the sluggish person in whom there may be, and in whom there usually is, lessened metabolic activity, such as may be demonstrated by basal metabolic study. In these a lessened localized oxygenation is consistent with the lessened general metabolic activities.

Taking for a basis body metabolism, I have classified patients with acne into two classes:

1. Those presenting increase in metabolic activities—thin, anemic, undernourished patients whose thyroid gland activity is increased in a compensatory measure to cope with the endocrine imbalance produced by the gonad activity, practically thyroid toxicosis.
2. The opposite type—lazy, plethoric, overnourished, closely bordering on lowered thyroid gland activity.

TYPE 1: In addition to regulating the patient's habits, enforcing dietetic and hygienic measures, scrupulous cleansing of the skin with hot fomentations at night and frequent washings during the day, aseptic removal of comedones and opening pustules, the patient is given supra-renal gland substance, 5 grains, three times a day at 8 a. m. and at 2 and at 8 p. m. for two weeks. At the end of this time if no symptoms to the contrary should arise, the dose is given four times a day at 8 a. m., at 12 and at 4 and 8 p. m., and is usually not increased.

This treatment is continued for a period of two months, at the end of which time it is discontinued or kept up, as may be necessary, depending on the patient's physical condition, which usually improves considerably, including the appearance of the acne.

TYPE 2: The patient is instructed to carry out the foregoing measures, except as regards endocrine medication. In these cases I administer thyroid gland substance, $\frac{1}{4}$ of a grain, three times a day, and instruct him to observe his pulse just before arising and also ten minutes after retiring. The record of these observations is brought in to me in one week. If the pulse remains stationary, the dose of thyroid extract is increased cautiously and its administration is continued for two months or longer, depending on the patient's condition or presentation of untoward symptoms.

This addition of the thyroid substance answers a double purpose. First, it relieves the laboring gland which is trying hard to equalize the normal endocrine balance, and thereby permits this organ to take on its normal function after a shorter or longer period of time depending on the amount of impairment which may exist.

Second, it not only helps in the burning up of tissues, but increases the capacity of the thyroid gland to carry out its other functions which, according to Sajous,³ is the protection of the body against infections and

intoxications and, as McCready³ puts it, "The use of the thyroid gland is indicated when metabolism is retarded from any cause and to combat infectious processes.

COMMENTS

I am aware of the preliminary nature of this paper and of the possible faulty presentation of my conception, but I am daily impressed with the correctness of the conception that the underlying etiologic factor in acne is somewhere in the domain of the endocrine glands—probably in the gonads. In a good many instances the endocrine administration described in the foregoing is supplemented with ovarian or testicular extract administration, but this I refrain from as much as I can in order to facilitate observation of these cases without polypharmacy, which may be confusing.

The administration of dry gonad extracts has proved unsuccessful in my early efforts, and results cannot compare with the therapy described.

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3. McCready, E. B.: Organotherapy in Certain Diseases and Conditions of Childhood, *Med. Rec.* **96**:529 (Sept. 27) 1919.