of 180 simple retropositions that did not give symptoms.

Of the 128 women who became pregnant in the total series of 459 cases, pregnancy occurred in 80 cases while the uterus was known to be in the forward position and in 27 cases while it was known to be retroposed. The uterine position was not known at the time of pregnancy in the other 21 cases, although it had usually been posterior.

In conclusion, we state our belief that sterility occasionally is caused either by fibroids or posterior displacements, but the great cause is probably congenital or of developmental origin.

WHAT RELATION EXISTS BETWEEN THE ENDOCRINE GLANDS AND STERILITY?*

By F. M. POTTENGER, M. D., Monrovia, Calif.

ENDOCRINE FACTORS IN STERILITY

The importance of disturbance in endocrine equilibrium as a cause of sterility is just beginning to dawn upon the medical profession. With a better appreciation of functional pathology we are learning that there are many conditions met in clinical medicine which do not have primarily an anatomic basis. The recognition of the fact that disturbance in function is a clinical entity worthy of the same attention and care as anatomical change is ushering in a new era in medicine in which the individual becomes greater than any part and in which the unity of the human body is emphasized.

With this new conception the psychical side of the individual also takes its place in the causation of symptoms along with the physical, and alterations in function in a given tissue or organ are recognized as being resultants of all the forces acting at the time upon that organ.

Functional pathology is a real important part of clinical medicine. No one can be conversant with visceral neurology, endocrinology and biochemistry without recognizing that any important function of the body may be disturbed without having a primary anatomical pathology back of it; and furthermore, no one can be conversant with the psychical side of man without knowing that those great vegetative systems can be disturbed by pathologic psychic states as well as by stimuli arising in the physical body. Unless one recognizes these facts he will fail to appreciate and properly classify a certain large group of clinical syndromes which are met in the every-day practice of medicine.

The subject of sterility in women illustrates these principles well. It cannot be adequately discussed from the anatomical basis alone. While inflammatory disease of the ovaries, tubes and uterus and mechanical interference with conception often exist, there is still a group of sterile women, the percentage of which is uncertain, as yet, who do not respond to any of the measures which are applied for the relief of their sterility, because the cause is functional and not anatomic.

In order to understand this it is necessary to have a comprehensive understanding of the fundamental psysiologic factors governing the development of sex glands and their function. While the production of the ovum and the reception and retention of it in the uterus when fecundated are essential to successful impregnation, the factors which control impregnation are many and are connected with various portions of the vegetative systems.

Whether or not a woman shall be able to bear children is not determined alone by the possession of ovaries, tubes and a uterus, but upon such organs being able to function normally. This presupposes a normal development and the maintenance of normal sexual function.

The development of the female sexual organs, as well as the female secondary sex characteristics, depends upon many of the endocrine organs. There cannot be normal sexual development and normal sex function without the incretions from the thyroid and pituitary and other incretions, while less important, also effect changes in the sex organs. Genital function is stimulated by ovarian, thyroid, pituitary and suprarenal secretions. It seems to be diminished by the thymus and at times by thyroid.

THE OVARY IN STERILITY

The ovary is a very constant factor in a certain group of cases of sterility. Ovulation may not take place; but, as is proven in cases of pregnancy during lactation, ovulation often takes place when menstruation is absent. Congenital ovarian insufficiency as a cause of amenorrhoea and sterility is believed to be rare. Hypoplasia and hypoactivity of this kind is caused as a rule by hypoactivity of the thyroid or the pituitary. The adrenals are also at fault at times.

These relationships which the various incretions bear to the sex function offer a basis for treatment of quite a large group of women suffering from sterility. Ovarian extracts should be employed in these cases of diminished sex function, but alone will rarely produce satisfactory results. If the relationship of the thyroid and the pituitary to the condition under observation is carefully diagnosed and the indicated incretion added, then success will very often follow the treatment.

INFLUENCE OF THE THYROID

A very marked reduction of thyroid secretion in early life produces cretinism, a condition which is accompanied by a failure of development of the body as a whole, including the sex organs. If the thyroid secretion becomes diminished later in life, the ovary and uterus may become infantile through atrophy; amenorrhoea may result; or, if the age of puberty has not been attained, the function may not be established at all. If the deficiency in thyroid comes later in life, after the sex function has been established for years, instead of amenorrhoea, menorrhagia sometimes occurs, the menstrual periods being prolonged and the intervening time being shortened. Therefore it is evident that a very marked influence is exerted upon the sex

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organs and sex function by the thyroid secretion; a decrease in this secretion in early years stunting the growth and development of the sex organs and in later life depressing the function of ovulation and menstruation. The effect of this influence leads to sterility in quite a proportion of cases. In marked myxoedema, sterility is the rule, the cause being ascribed partly to the infiltration of the uterine mucosa and muculature. The types of sterility due to lessened thyroid secretion coming on after the sex organs have been developed may be relieved by the administration of thyroid substance.

THE PITUITARY IN STERILITY

The influence of the pituitary on the sex organs is often greater than that of the thyroid. Hypopituitarism occurring before puberty may produce any one of three distinct conditions: infantilism, both general and sexual without adiposity; stunted growth with genital hypoplasia and adiposity; or gigantism with adiposity and genital hypoplasia. All of these conditions lead to sterility. Hyperpituitarism as found in acromegaly also produces sterility, but here the condition seems to be due to an entirely different cause. Acromegalic women assume the masculine type and this masculinity is the cause of their sterility instead of the genital hypoplasia as found in hypopituitary states.

The question of these early hypopituitary states is not one of sterility, but one of overcoming the entire group of bodily changes produced by the deficiency. If one is alert to the changes caused by deficiency in pituitary secretion and will recognize it before serious harm has been done, appropriate treatment will often be followed by relief of both developmental and functional disturbances.

There is an extremely interesting inter-relationship between ovary, thyroid and the pituitary, which must always be borne in mind in attacking those functional disturbances on the part of the female sex organs which are due to causes other than inflammatory and mechanical. So far, in the administration of organotherapeutic preparations that from the thyroid is the one that gives best results. In conditions where the ovary and pituitary are at fault, the thyroid is usually a factor, and with the active thyroid preparations that we have we are usually able to do some good by their administration.

STERILITY FOLLOWING TOXEMIA

It is not uncommon to see cases of sterility and early menopause follow toxemia. In some of these cases the cause may be due to direct injury to the ovary, but in many others it is a secondary matter, caused by injury to the thyroid and the pituitary. Sterility sometimes follows acute infections such as mumps and typhoid. In one or two instances I have seen early menopause in tuberculosis. A cessation of menstruation for a period of months is not at all uncommon in tuberculosis, and we often observe temporary hypopituitarism and hypothyroidism of various grades, develop following the toxic states which are met in the course of chronic tuberculosis. Such conditions may suggest themselves, but equilibrium can be hastened by appropriate therapy.

THE DIAGNOSIS AND TREATMENT OF STERILITY*

By FREDERIC M. LOOMIS, M. D., Oakland

AN ANALYSIS OF 150 CONSECUTIVE CASES

In making this analysis I set out to determine what types of sterility patients might be classified as reasonably good "prospects" at the first interview, when the history is taken and general physical and pelvic examinations are made, and the rather unexpected and interesting finding is that such a hope is futile.

The figures that follow are based on a tabulation of 150 consecutive sterility patients, covering age, general health, menstrual abnormalities, leucorrhea, marital years, parity, voluntary or involuntary abortions, general health of the husband, fat, skin condition, tonsils, teeth, cervix, size and position of fundus, appendages, vaginal reaction before and after coitus, number and activity of spermatazoa present in the vagina and cervix after coitus, the size of the seminal pool, and the sexual reaction. The treatment is classified under six other heads.

Extended consideration of the several thousand facts thus available has shown the absolute necessity of four different procedures with each patient, none of which may ordinarily be omitted, to reach a fair diagnosis. These are (1) the history, taken with unusual care; (2) the general physical and pelvic examination, including the vaginal and cervical reactions to litmus; (3) examination of the secretions after coitus without the use of a condom, and (4) determination of the patency of the tubes by inflation. We have all seen the patient who comes to us after years of hope deferred, saying, "My doctor gave me a careful pelvic examination and said I was perfectly all right, but month after month I am disappointed." That a careful pelvic examination is not enough is shown by patients No. 116, 30 and 14. Each of these had a pelvis which would pass as "perfectly all right" on ordinary examination, yet each was hopeless. No. 116, with perfectly patent tubes, had a husband with complete aspermia; No. 30, with an entirely competent husband, had complete occlusion of the tubes, and No. 14 not only had complete occlusion but her husband had not a spermatazoon to his name! Perhaps her household was the more content, after all, as neither partner could justly point a finger at the other!

Results of history and general examination.

The unsuccessfully treated patients ranged in age from 20 to 39, with an average of 29.5; the successful ones ranged from 21 to 35, with an average of 28.2, giving only a slight advantage to youth. The average age of mothers of first babies in California is 23.9. The average years of married life of the unsuccessful was 4.8, and of the successful only 3 years. The obvious though not necessarily correct conclusion is that it does not pay to wait too long.

Mindful of the work of Evans of the University of California, Donald Macomber of Boston, Blair-

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