A CONSIDERATION OF STERILITY FACTORS IN THE LIGHT OF SUBSEQUENT PREGNANCIES

II. Subfertility in the Male

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It is a privilege to be asked to address this Society, for which I thank you. As a mere urologist among so many gynæcologists, I do not feel a stranger, as our work is often closely associated in many clinical problems. I welcome this opportunity of discussing the interesting problem of subfertility in the male—a subject which, for various reasons, has often in the past been rather neglected. I would like to be able to indicate the usefulness of this investigation, and while I make no extravagant claims for dramatic results, or very few, I hope that you will think, as I do, that this work is both necessary and satisfying.

The male subfertility clinic is held in the evening, the patients being seen by appointment. This is done in the hope of obtaining more co-operation from the husband, who might fail to attend at a time entailing loss of a working day. The investigation should, I believe, be undertaken by a urologist, who, if necessary, can carry out any operative intervention. There appears to be a new science—that branch called seminology, that is, the examination of seminal fluid by a technician. It is hardly to be expected that the conclusions reached by him will agree with those of the urologist, who, in addition, examines the genital organs.

For the success of such a clinic there must be complete co-operation between the general practitioner, the gynæcologist and the urologist. Most of the patients seen are referred by the gynæcologists—the wives usually seeking advice first. Other male patients are referred by the general practitioner, and these are the ones whom I prefer to see in the first instance, as it is my belief that in all cases of barren marriage the husband should be investigated first. Only when spermatozoa are found in the seminal fluid should investigation of the wife be considered.

Occasionally I have been asked to assess fertility in a male proposing marriage. Usually I try to persuade the patient that unless some gross physical disability is present, this should not be undertaken.

While the history and physical examination of the patient are important, a comprehensive survey of the seminal fluid is the most revealing factor from the point of view of diagnosis and prognosis. This fluid must be collected under specific conditions and examined while fresh. The appearance, volume, viscosity, motility, sperm count

and morphology are all essential data. It appears that the motility is of particular importance. It should be good, active, purposeful motility, where the sperm is moving strongly in a straight line with a definite objective in view—that of finding the ovum. In specially selected cases testicular biopsy is an investigation which is most helpful in diagnosis.

I now wish to present to you the findings in 100 cases of pregnancies from the male viewpoint. This figure does not represent the total number of pregnancies that have occurred in the clinic. This group includes most of the husbands of Dr Matthew's group. Twenty-one cases have been drawn from other sources.

The average age of the husbands in this group is 32 years.

In this series the length of time married ranges from fifteen years to one year, with an average of just over five years. The number of couples who have been married for over seven years is 28, with a total of 47 couples married over five years. It is now five and a half years since the war ended, so that I do not think the long period of separation then can be a major factor.

The accepted standards of a normal seminal fluid are as follows :—

Volume	2·5-4·5 c.c.
Viscosity	Normal
Motility	65 per cent. G.A.P.
Count	60,000,000 per c.c.
Morphology	30 per cent. (or below) abnormal forms

In this series of 100 pregnancies, there were 48 below the standard ; there were 9 patients who had a sperm count below 10 million per c.c. The lowest count of all to produce a pregnancy was 280,000, re-checked both before and after pregnancy. This pregnancy went to full term, uncomplicated, and the child, now 14 months old, is a normal, healthy male.

In a series of over 1000 patients who have attended the male clinic, there is an average of 10 per cent. azoospermia. The causes are various : venereal diseases do not constitute a major group ; failure of testicular development is a common cause ; the effect of mumps orchitis—which nowadays is probably preventable ; trauma with atrophy due to hæmatocele, or operative trauma in the repair of bilateral inguinal hernia, with the resultant division of the vas deferens, or damage to the testicular blood supply ; and bilateral undescended testes constitute an important group. In 2 patients with normal testes, whom I have subjected to operation, I have found congenital absence of the vas deferens.

In all cases of azoospermia, I advise that a testicular biopsy should be taken. The biopsy is done on the out-patient during the routine course of the clinic, under local anæsthesia. Care must be taken to anæsthetise the testicle—an important point—by infiltration of the spermatic cord. The method described by Hunner of puncturing the testicles with a large bore needle, without anæsthesia, and of with-

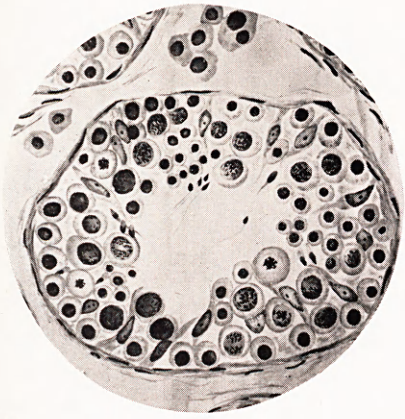

FIG. 1.—The normal seminiferous tubule.

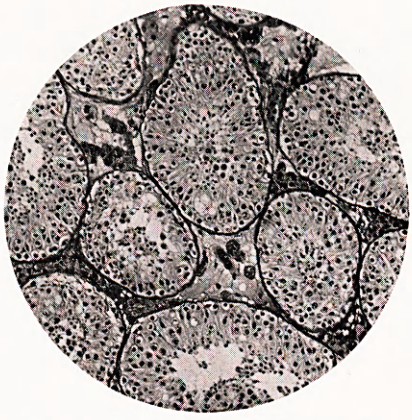

FIG. 2.—Depressed spermatogenesis. Sperm count 5,000,000 per c.c.

FIG. 3.—Gross disturbance of spermatogenesis with hyaline degeneration of the tubules.

FIG. 4.—Absence of germinal epithelium —Azoospermia.

drawing contents by suction, has not appealed to me as a method of investigation which is likely to popularise the clinic. The value of the biopsy is that one can decide after examination of the section whether the case is suitable for treatment. If there is complete absence of germinal epithelium then treatment is of no avail. Serial biopsies over six months whilst the patient is under treatment may prove a very valuable way of assessing the effects of various forms of therapy.

Treatment

Any obvious physical defects and any septic foci must be dealt with, as the general health of the patient is important. There is no known specific form of therapy for the patient with the poor quality seminal fluid. Gonadotrophic hormones have been used, but without apparent success. Vitamin B-complex has also been used, but again without any measure of success. It is my impression that testosterone is of value, but is must be used in small stimulating doses only. The usual dosage given is 5 mg. of methyl testosterone by mouth for a period of three months. Even with this dosage it is not uncommon to see some further depression of the quality of the fluid, but there is a reversal of this depression four to six weeks later.

In many patients there may not be any significant improvement in the count, or in the general physical characteristics of the fluid. There may have been some biochemical change, but biochemical analyses of these fluids have not yet been done.

Vaso-epididymostomy.—Following inflammatory states of the genital tract, the commonest site of obstruction of the lumen of the tubes responsible for transporting spermatozoa from the seminiferous tubules to the ampulla of the ductus deferens is in the globus minor of the epididymis, the most dependent part of the genital tract. It should, therefore, be possible to carry out an anastomosis, by-passing this obstruction. This is the operation of vaso-epididymostomy, where the vas is anastomosed to the globus major of the epididymis. The technical difficulty is to prevent occlusion at the site of anastomosis. In none of my patients has this operation been successful.

Varicocele is that condition of varicosity of the veins responsible for the venous return from the testicle. When present it has always caused me to wonder whether, with the sluggish blood circulation, it may not cause a lack of nutrition to the delicate germ cells.

It has been noticed that the testicles are often small and soft. Hotchkiss in his standard work *Fertility in Men* says " the surgical correction of a varicocele is probably only effective as a prophylactic measure against damage which might ensue with passing years. It is unlikely that the operation has other than cosmetic value in long-standing cases with small soft testes."

Case Report.—Age 28 years. Married two years. Physical examination showed gross bilateral varicocele with testes of normal size but soft. Seminal

analysis confirmed azoospermia. Testicular biopsy showed a failure of maturation of spermatozoa.

April 1950.—Excision of bilateral varicocele.
October 1950.—Sperm count 18,000,000.
March 1951.—Sperm count 27,000,000.
April 1951.—Wife pregnant.

Although on 1 case it is unjustifiable to make any claims, it seems possible that this method of treatment is of value.

Results and Conclusions

Some of my critics have denounced the practice of telling the male partner the results of investigations. At all times, and especially in the handling of a case of azoospermia, the utmost tact and consideration must be observed. The patient should never be told that he is absolutely sterile, but that the possibility of pregnancy is so remote that adoption is advised. Once this has been faced and the child adopted, the home is far happier than the one in which month after month passes and no pregnancy ensues. There is little doubt that the standards of fertility formerly laid down are wrong. It is not possible to have a fixed standard. Where sperms are present every effort must be made to exclude abnormality in the female partner, and, when possible, to improve the quality of the seminal fluid.

The patients attending the clinic may be classified into three groups :—

(1) Ten per cent. azoospermia who are totally sterile.
(2) Twenty-five to thirty per cent. cases who produced pregnancies.
(3) A large intermediate group who may yet produce pregnancies.

I have briefly discussed the arrangements of a male clinic, the analysis of 100 pregnancies, and the effects of various methods of therapy. I have shown the first case of azoospermia which I have managed to reverse. Much still remains to be done. It is only with patience, astute observation and co-operation from all parties that this work will continue to make progress.

Discussion

Dr Liston (Edinburgh) produced figures, on behalf of Dr de Soldenhoff (Irvine), to indicate the frequency of pregnancy occurring in the older woman without the assistance of investigation or treatment.

Dr Fahmy (Edinburgh) condemned the single strip endometrial biopsy on the grounds that it might fail to give a true picture of the entire endometrial pattern.

Dr Linton Snaith (Newcastle) agreed that single strip biopsy of the endometrium was inadequate and deprecated any such investigation, without anæsthesia, which carried with it the suggestion of an operating theatre.

He considered that many of what had been described as etiological factors should be termed " associated abnormalities " for they really played no part in causing sterility. A post-coital test does not preclude the necessity of full seminal analysis and this may have to be repeated before final conclusions are reached.

Dr Suzanne Paterson (Edinburgh) referred to results from her clinic and drew attention to the not infrequent occurrence of pregnancy in patients awaiting appointment or following a preliminary examination before any treatment had been undertaken. She recommended endometrial biopsy where the menstrual cycle was completely regular but with any irregularity of cycle or abnormality in the biopsy tissue full curettage should be performed. Dr Paterson stressed the difficulties, both in the male and female, of establishing normal standards and assessing results of treatment.

Dr Ian Fraser (Perth) said that he was not satisfied that retroversion of the uterus *per se* was a factor in causing sterility and considered that insufficient hospital beds was a good reason, in itself, why endometrial curettage could not be performed as a routine investigation.

Dr Stewart Fraser (Carlisle) quoted figures from his clinic from which he could show only a very low successful pregnancy rate. He believed that considerable tact must be employed in revealing the presence of azoospermia to both husband and wife, otherwise marital relations might well be severely upset.

Dr MacGregor (Edinburgh) referred to the association of malnutrition and amenorrhœa and discussed the relationship between protein intake and pituitary function. He asked for an explanation of the rationale of ovarian resection in cases of polycystic change, and pointed out the difficulty in diagnosing cases of hypoplasia unless one relied on accurate measurement of the utero-cervical canal. Dr MacGregor questioned the action of testosterone in male therapy and wondered if the apparent success following this treatment might not be due to an improved ejaculate or an alteration in the *p*H of the seminal fluid.

The President, *Professor Dugald Baird* (Aberdeen), discussed the part played by faulty nutrition on male fertility and wondered if there was any proof of the male factor causing repeated abortion or premature labour.

In replying to the discussion, *Mr Tulloch* maintained that the husband should be examined firstly as this examination was simple and the finding of azoospermia would obviate the necessity of the more extensive female investigation. He had made no extravagant claims for the use of testosterone but merely stated that it was his impression that it was of significant value in some cases. So far he had no definite opinion on the male factor in habitual abortion.

Dr Matthew, in referring to Dr de Soldenhoff's figures, suggested that a delayed pregnancy in older women might be due to infrequent intercourse or periodic anovular menstruation and believed that if those women had attended a clinic they would have become pregnant at a much earlier age. He stressed the inadequacy of pelvic examination alone as a basis for an opinion and recalled that in 60 per cent. of cases more than one factor was present. With

regard to endometrial biopsy, if this simple test showed full secretory activity and no evidence of disease, then all information desired was obtained; if there was any deviation from those findings, then full curettage, under anæsthesia, should be performed. Anæsthesia must always be regarded as a risk and therefore should be avoided as far as possible. With regard to etiological factors, any abnormality discovered must be considered as possibly diminishing the prospects of conception and an accumulation of abnormalities must definitely lower the fertility index, therefore it was reasonable to advocate the correction of all factors when discovered. Dr Matthew referred Dr Fraser to Bethel Solomon's paper dealing with pregnancy following correction of the retroverted uterus. He agreed with Dr MacGregor that it was difficult to assess the part played by dietetic deficiency in reducing fertility and pointed out that evidence of genital hypoplasia was not confined to a reduction in the length of the utero-cervical canal. Dr Matthew agreed with all speakers on the difficulty of assessing results but believed that a case had been made out, and proved, for the value of both male and female sterility clinics.