feelings, not only through social conditioning but also because these feelings are unpleasant. In some cases these "bad" feelings have been inadequately dealt with and cause trouble. Dynamic psychiatry brings out the long-forgotten impulses and experiences underlying a patient's disturbance and makes them available for examination. It might then be possible to resolve the unconscious conflicts and problems, or at least put them away more effectively.

Dynamic psychiatry is difficult for both the patient and the worker. For the patient, at first, it seems as if life is being made even more difficult; he is being forced into owning unpleasant —perhaps frightening—feelings, the very thing he has been trying to avoid and hopes to escape from by coming for treatment.

For the worker, to grasp and hold on to the value of the concepts used in dynamic work—something that goes so much against his natural tendency—is not easy. To be touched emotionally by the disturbance of the patient makes him anxious and insecure. It is most difficult for the doctor. Doctors have had a specialised training in treatment based on antidynamic principles in which they have developed confidence over the years. They have also developed a feeling of security and an uncomfortable yet satisfying feeling of near omnipotence as a result of projections on to them from lay people. It is with the greatest difficulty that they abandon the security of these attitudes in the face of all the internal and external forces that work towards their retaining them.

Ever since mental illnesses began to be regarded as amenable to treatment attempts have been made to classify them on some rational basis so that treatment could be administered in a simple, logical manner in accordance with such classifications. While efforts at classification continue, I believe that the human mind is increasingly recognised to be too complex and subject to too many variables to permit a simple medical model of mental illness. This is true of adolescent psychiatry more than any other branch of psychiatry.[1]

Any rational and serious attempt to treat adolescent problems must take the causative factors into account. Usually these result from the adolescents' relationships with significant people in their lives. Treatment must take these factors into account and therefore must be on dynamic lines.

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Clinical Topics

Value of a testicular biopsy rating for prognosis in oligozoospermia

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Summary and conclusions

Testicular biopsies of 142 oligozoospermic men were used to obtain a testicular biopsy score count. These scores were clearly related to the chance of fertility, in contradistinction to data on hormone concentrations and from analysis of semen. In 36 patients with a score of 9-10 there were 15 pregnancies; in 59 patients with a score of 8-9, 12; and in 47 patients with scores below 8 there was only one successful pregnancy, though this last group also contained an additional three patients whose wives' pregnancies ended in miscarriages.

Rating of testicular biopsies is more useful for proper evaluation of oligozoospermic patients than are data on hormone concentrations and from semen analysis. Proper evaluation of new treatments should be based on trials where experimental and control groups are matched on these ratings.

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Introduction

Spermatogenesis is a complicated process that makes description of the tissue obtained at testicular biopsy difficult. As a result opinions about the value of such biopsy specimens have widely differed. In 1970, however, Johnsen[1] published an elegant and simple scoring method for characterising spermatogenesis. Having used a modification of this method[2] to study the relation of mean biopsy rating scores with fertility, we report our results in a larger group of patients for whom data on the occurrence of pregnancy are also available.

Patients and methods

During 1971-6 609 men were investigated for infertility. They were referred to the department of clinical endocrinology because semen abnormalities had been suspected as the cause of their infertility. We included 142 of these patients who underwent testicular biopsy in

our study. All had unexplained oligozoospermia. There were 22 patients with 20-40 million/ml, 38 patients with 10-20 million/ml, 65 patients with 1-10 million/ml, and 17 patients with one million/ml or less spermatozoa in their ejaculate. We excluded all patients with azoospermia (no spermatozoa after centrifugation of the ejaculate), cryptorchidism, or varicocele. Several patients with small, soft testes, severe oligozoospermia, a high serum follicle-stimulating hormone value, and a long history of infertility were diagnosed as having testicular atrophy and were therefore not biopsied.

From all patients at least two ejaculates were obtained by masturbation after five days of sexual abstinence, and these were analysed for ejaculate volume, sperm concentration, motility, and morphology. Serum testosterone, luteinising hormone, and follicle-stimulating hormone concentrations from most patients were analysed by radioimmunoassay,[3] although at the beginning of the study a mouse uterine weight test was used instead of this for estimating urinary gonadotrophins.

Biopsy specimens from both testes were taken under general anaesthesia. The biopsies were scored as described[2]: briefly, at least 100 tubular cross sections were rated from one to ten (table I) and a mean score calculated. This differed from Johnsen's method[1] in that score 9 (disorganised germinal epithelium with marked sloughing or obliteration of lumen) was omitted as this could have been an artifact of the biopsy collection procedure and we preferred to use only numbers of cells present.

Pregnancies were diagnosed by urine testing and physical examination by the doctor who originally referred the patient.

Treatment of the patients consisted of instructions about the proper time and method of coitus. In addition 1-methyl-dihydrotestosterone (1-methyl DHT), 25 mg three times daily, was prescribed three to six months after the biopsy unless the patient had successfully impregnated his partner before this time.

TABLE I—*Criteria for score numbers of tubular cross sections*

Complete spermatogenesis	10
All stages of spermatogenesis present but fewer than five spermatozoa seen	8
No spermatozoa but many spermatids present	7
No spermatozoa and fewer than five spermatids present	6
No spermatozoa, no spermatids but many spermatocytes present	5
No spermatozoa, no spermatids, and fewer than five spermatocytes present	4
Only spermatogonia present	3
No germ cells, only Sertoli cells present	2
No cells in tubular section	1

Results

Of the 142 patients studied, 31 impregnated their partners. Three of these pregnancies ended in miscarriage, resulting therefore in 28 successful pregnancies. When the results of various clinical tests in these 31 patients were compared with those of the 111 other patients whose partners had failed to conceive, only the biopsy ratings showed a difference; the fertile patients had a significantly higher mean rating than the infertile patients (Mann Whitney U test,[4] $U=1602$, $P<0.005$, two-tailed). No differences were found between fertile and infertile men in ejaculate volume; number of spermatozoa per ml; total number of spermatozoa per ejaculate; motility; morphology; luteinising hormone; follicle-stimulating hormone; testosterone concentrations; and age or duration of infertility at the time of investigation. (These data are available on request.)

When the patients were grouped on the basis of their mean score about 40% of patients with a biopsy rating above 9 became fertile (table II). With scores between 8 and 9 this chance was halved, and with scores below 8 the chance of conceiving was almost nil. Only one patient with a score of 7·54 successfully impregnated his partner. An additional three patients in this last category impregnated their partners but these pregnancies ended in miscarriages (biopsy ratings of 7·24, 6·80, and 6·48; the latter had two miscarriages). An overall χ^2 test showed significant differences in the number of pregnancies observed in the categories 9-10, 8-9, and below 8 ($\chi^2=20·17$, DF = 2, $P<0·001$). Subsequent pairwise comparisons (with correction for continuity) showed that all individual differences were significant; 9-10 *v* 8-9 ($\chi^2=4·00$, DF = 1, $P<0·05$); 9-10 *v* below 8 ($\chi^2=18·02$, DF = 1, $P<0·001$) and 8-9 *v* below 8 ($\chi^2=6·46$, DF = 1, $P<0·02$). Interestingly the patients whose partners aborted had significantly lower scores than the other patients who fertilised their partners (Mann Whitney U test, $U=6$, $P<0·01$, two tailed). This may indicate that defective spermatogenesis, as defined by a low biopsy rating, contributed to these miscarriages.

TABLE II—*Occurrence of fertility in men with different spermatogenesis ratings in testicular tissue obtained by biopsy*

Mean rating	No of patients in each category	No of pregnancies (% fertile)
(a) 10-9·00	36	15* (41·6)
(b) 8·99-8·50	37	8 (21·6)
(c) 8·49-8·00	22	4 (18·1)
(d) <8	47	1 (+3 abortions) (2·1)

*Overall χ^2-test: $\chi^2=20·28$, DF = 3, $P<0·001$. Significant differences (with correction for continuity): a *v* d ($\chi^2=18·02$, DF = 1, $P<0·001$); b *v* d ($\chi^2=6·31$, DF = 1, $P<0·02$); and c *v* d ($\chi^2=3·61$, DF = 1, $P<0·06$).

Discussion

Johnsen[1] warned against the use of mean scores when employing his rating method for testicular biopsies. In the original description of the scoring method he wrote that for a proper evaluation of the biopsy it should be emphasised "that the result is not the mean score. The mean score is a convenient figure for some correlations but the significant result is the number of tubuli placed at each step" (p 5). On the contrary, our results suggest that the mean score is not only a convenient figure to compute but also a useful indicator for the prognosis of men with oligozoospermia in that it shows a significant relationship with the occurrence of fertility. By contrast, such predictive value was not obtained with any of our clinical data for these patients.

Although it is difficult to explain the positive relationship between biopsy ratings and fertility, we would like to propose the following hypothesis: low mean score counts reflect that a high number of tubular cross sections have severely defective spermatogenesis, as seen in a biopsy specimen. A given tubule may therefore have islands of adequate spermatogenesis surrounded by stretches of tubule in which spermatogenesis is defective, resulting in the production of enough sperm to lead to the diagnosis of oligozoospermia. This condition may negatively influence the normal ripening or transport processes or both in the tubules, resulting in defective spermatozoa with low fertilising capacity. In the event of fertilisation abnormal fetuses may develop that are not carried to term. When diminished spermatogenesis is, however, more evenly distributed along tubuli this may result in comparable degrees of oligozoospermia, but with higher biopsy ratings. Sperm produced in such tubuli may be more fertile because transport to the epididymis occurs more readily.

From our study we would like to conclude: (1) testicular biopsies and rating of these biopsies are more useful for proper evaluation of oligozoospermic patients than are data on hormone concentrations and semen analysis; (2) in future proper evaluation of new treatments for oligozoospermia should be based on trials in which experimental and control groups are matched a priori on the basis of their testicular biopsy ratings; and (3) our treatment does not benefit patients with a biopsy rating below 8. Perhaps these patients would have been better advised to resort to adoption or artificial insemination with donor semen to spare them the disappointment of a miscarriage. Whether the other patients who became fertile benefited from treatment with 1-methyl DHT cannot be judged from these results.

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