

The infertile couple: a cohort study in Duhok, Iraq

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الأزواج العقيمة: دراسة أتريبية في دهوك بالعراق

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الخلاصة: يُعدُّ العقم من المشكلات الطبية الاجتماعية في دهوك، بالعراق، إذ يسبب ضغطاً نفسية واقتصادية على الزوجين. وقد قمنا بدراسة 250 من الأزواج العقيمة في ما بين كانون الثاني/يناير 2000 وأيار/مايو 2001 لتحرّي أسباب العقم، وكان لدى 193 زوجاً منهم (77.2٪) عقم بدئي، ولدى 57 زوجاً آخرين منهم (22.8٪) عقم ثانوي. وقد لوحظ عقم الذكور في 36.8٪ من الحالات، وكان السبب الأكثر شيوعاً للعقم عند النساء هو اضطرابات الإباضة (41٪)، فيما كان السداد البوق هو السبب في 5٪ من الحالات. وكان العقم مجهول السبب لدى 15٪ من الأزواج العقيمة. وقد لوحظ تهرُّ اللبن مع أو بدون ازدياد مستوى هرمون البرولاكتين في المصل لدى 60٪ من الحالات. وكان تحرّي الجريبات الناضجة بالأمواج فوق الصوتية يتماشى مع نتائج فحص مخاط عنق الرحم وخزعة بطانة الرحم في 90٪ من الحالات المدروسة.

ABSTRACT From January 2000 to May 2001 causes of infertility were studied for 250 couples, 193 (77.2%) of whom had primary infertility and 57 (22.8%) had secondary infertility. Male infertility was found in 36.8% of cases. The most common cause of female infertility was ovulation disorders (41%) while tubal obstruction contributed to only 5% of cases. Only 15% of the couples had unexplained infertility. Galactorrhea and/or increased serum prolactin was seen in 60% of cases. Ultrasonographic detection of mature follicles was consistent with the results of cervical mucus study and endometrial biopsy in 90% of cases.

Le couple stérile : étude de cohorte à Duhok (Iraq)

RESUME De janvier 2000 à mai 2001, les causes de stérilité ont été étudiées pour 250 couples, dont 193 (77,2 %) avaient une stérilité primaire et 57 (22,8 %) une stérilité secondaire. La stérilité masculine se retrouvait dans 36,8 % des cas. Les troubles de l'ovulation étaient la cause la plus courante de stérilité féminine (41 %) tandis que l'obstruction des trompes ne contribuait qu'à 5 % des cas. Seuls 15 % des couples avaient une stérilité inexpliquée. On observait une galactorrhée et/ou une élévation de la prolactine sérique dans 60 % des cas. Dans 90 % des cas, il y avait une concordance entre la détection des follicules matures par échographie et les résultats de l'étude de la glaire cervicale et la biopsie de l'endomètre.

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Received: 09/06/01; accepted: 02/09/01

Introduction

Infertility is generally defined as the inability to conceive after one year of unprotected, adequately timed intercourse [1] but this is a relative thing. It may be unnecessary to stick to the one-year limit for every patient. To start investigations after 6 months of infertility, for example, is ample waiting time for a woman in her mid or late thirties to start work-up [2]. The main causes of infertility include abnormalities in the semen, ovulation disorders, tubal/peritoneal factors and abnormalities in the cervical mucus-sperm interaction [3].

Infertility is a global reproductive health issue and its social and psychological consequences simply cannot be ignored [4]. It is a common medical problem and approximately 6 million couples in the United States of America are involuntarily childless [5]. Efficient treatment for infertility is time-consuming, expensive and often unsuccessful [4].

Although there has been a global increase in infertility rates, the causes of infertility are difficult to determine because there are numerous factors that bias studies. Unexplained infertility in one centre may be explained in another that has facilities for more detailed investigations. Moreover, the causes of infertility vary from one geographical area to another. For example, in Africa most infertile women have tubal infertility whereas in the Western world, male infertility or ovulation disorders are common [6]. In the past two decades, three striking changes have occurred in infertility practice, namely the introduction of assisted reproductive technology, a marked increase in patient visits for infertility and an increase in the proportion of women over age 35 years seeking medical attention for infertility [7].

There are now moves to make reproductive medicine an independent discipline distinct from gynaecology and obstetrics and, in addition to gynaecology, to include genetics, human biology, andrology, medical ethics and even sociology and law [8].

In our study we investigated the causes of infertility in Duhok by the available means for three reasons: to ascertain the male and female contribution to infertility, to identify the main female causes of infertility, and to expand the knowledge of the causes of infertility which should permit rationalization of investigations and treatment programmes so that they will become less costly and less time-consuming.

Methods

The study took place from January 2000 to May 2001 and included 250 couples who had failed to achieve conception after 1–13 years of normal marital life. The age of the women ranged from 17 to 42 years and of the men from 20 to 47 years. A full history was taken from each patient both the wife and the husband. This included general condition, the frequency and timing of sexual intercourse, any previous or recent illnesses or surgery. Most patients had already been examined, usually extensively. If this was not the case, a semen analysis was requested from the husband. If the results indicated azoospermia, severe oligospermia or severe asthenospermia, the husband was referred to a specialist in male infertility. If the results of semen analysis were satisfactory, the couple was given simple instructions about coitus and its timing and the patient was seen at another visit. When these measures failed, the following steps were taken depending on clinical suspicion and cost consideration (not all steps were taken for each patient).

- Hormonal study (if hormonal abnormality was suspected)
- 21st day progesterone (if anovulatory cycle was suspected)
- Endometrial biopsy to detect ovulation changes or any pathology in the endometrium
- Ultrasonic examination to look for uterine lesions interfering with fertilization and for evidence of ovulation
- Hysterosalpingography (if tubal factors were suspected)
- Mid-cycle study of cervical mucus and postcoital test to detect the favourability of cervical mucus for sperm penetration and any cervical hostility

Biopsies were fixed in 10% formalin and processed in the usual way for paraffin embedding. Sections were made and stained with haematoxylin and eosin stain [9]. Ultrasonic examinations were usually performed mid-cycle. Cervical mucus was scored according to its volume, consistency, spinnbarkeit, ferning and the presence or absence of infection as indicated by the number of pus cells.

According to the results of investigations, patients were classified into five groups:

- Infertility due to male azoospermia;
- Infertility due to severe oligospermia, asthenospermia, teratospermia or some combination of these;

- Infertility due to both subnormal semen and female contribution;
- Infertility due to female cause(s); or
- Unexplained infertility.

Results

Of the 250 couples in the study, 193 (77.2%) had primary infertility and 57 couples (22.8%) had secondary infertility. The results of semen analyses for the 250 men are given in Table 1. In the primary infertility group, male factors were detected in 73 couples (37.8%); for 32 couples (16.6%) no cause was detected for either the woman or the man; and for 83 couples the cause was attributed to the woman (43.0%, Table 2). In the secondary infertility group, a male cause was detected for 14 patients (24.6%), ovulation disorders for 30 patients (52.6%) and tubal obstructions for 7 female patients (12.3%) (Table 2). The causes of infertility for all 250 couples are given in Table 3.

Of all 250 women, 150 (60.0%) had either galactorrhoea or increased serum prolactin. One patient had a history of myomectomy, another of perforated appendicitis and three patients had thyroid disorders. In addition, 21 (8.4%) women had infertile sisters. Of the 250 couples, 36 (14.4%) got pregnant, 3 of them through artificial insemination by the husband's se-

Table 1 Results of semen analyses

Infertility	Azoospermia		Severe oligospermia or oligoasthenospermia		Subfertile semen		Normal semen		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Primary	25	13.0	40	20.7	13	6.7	115	59.6	193	100
Secondary	—	—	4	7.0	10	17.5	43	75.4	57	100
Total	25	10.0	44	17.6	23	9.2	158	63.2	250	100

Table 2 Causes of primary, secondary and total infertility in the 250 couples

Cause	Primary infertility (%)	Secondary Infertility (%)	All infertility (%)
Ovulation disorders	37 ^a	53 ^b	41
Male factors	37	25	35
Tubal factors	3	12	5 ^c
Uterine causes	3 ^d	—	2
Combined	3	2	2
Unexplained	17	9	15

^aOvulation disorders (71 women) included unovulatory cycle (57), luteal phase insufficiency (4), polycystic ovary syndrome (8) and premature ovarian failure (2).

^bOvulation disorders (30 women) included unovulatory cycle (22), polycystic ovary syndrome (5) and ovarian failure (3).

^cTubal obstruction was either bilateral (8 women) and unilateral (5 women).

^dUterine causes included bicornuate uterus (4) and chronic non-specific endometritis (2).

men, and 2 of them miscarried. The sensitivity of the ultrasonography in the detection of mature follicles was 90% compared to the results of the cervical mucus study and the subsequent endometrial biopsy. Cervical mucus was found unfavourable for sperm penetration in all cases of ovulation disorders.

Discussion

The incidence of infertility related to both male and female factors continues to rise despite many advances in reproductive technology [10]. Infertility is a medicosocial problem and in some countries accounts for 40% of outpatient gynaecological consultations [11]. Infertility affects 15% of couples throughout the world [12]. Although male causes contribute to approximately 40% of infertility cases [5], both general and specific investigations are applied more frequently to the female partner than to the male partner [13]. In our study, male factors contributed to 36.8%

of cases of infertility. This figure is comparable to those been reported by others [3,5].

Although a good set of investigations is available in Duhok to investigate female reproductive capacity, our understanding of male infertility is clearly obstructed by the lack of sophisticated investigations such as genetic studies, computer-assisted seminal analyses and antisperm antibody tests.

For detection of ovulation, we depended on endometrial sampling and biopsy because of its reliability [7]. Failure to ovulate was detected for 41% of the women. This too is comparable to the findings reported by other authors [7,14]. We used ultrasonography to detect maturation of the follicle and compared the results with that of the endometrial biopsy and found that the results were comparable in 90% of cases. Tubal obstruction was detected only in 5% of the women, a much lower figure than observed by Gocial (25%) [15]. The reason for this discrepancy may be the low incidence of sexually transmitted diseases

in our locality. Depending on the availability of investigations, the rate of unexplained infertility in Iraq varies from one area to another, between 6 and 60% [16]. In our study the figure for unexplained infertility was only 15%. A striking observation in our

study was the high incidence of galactorrhoea and/or hyperprolactinaemia, which possibly results from the stress patients with infertility suffer in our area. This may cause or result from infertility.

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