OPINION

Clinical andrology—still a major problem in the treatment of infertility

Anne M. Jequier

Joondalup Health Campus, Shenton Avenue, Joondalup, Western Australia. 6027, Australia. E-mail ajequier@bigpond.net.au

This paper highlights the need for formal training in andrology amongst those clinicians who are today managing the problem of infertility in the male. As all infertility now appears to be treated mainly by gynaecologists who have often had no teaching in the subject of andrology, suggestions are made as to how this situation can be improved and rectified. Specific training is needed for those gynaecologists involved in the management of male infertility and it is urged that training courses in clinical andrology are set up for this purpose.

Key words: clinical andrology/male infertility

Introduction

Infertility in the male is a common cause of childlessness. Although the incidence of all the causes of infertility in a single clinic will relate to the special interests of the staff in that clinic, it is generally agreed that male problems make up between one-third to one half of all the factors that contribute to a couple’s problem with conception (Hull et al., 1985). As the vast majority of couples who attend an infertility clinic will include a man, an accurate assessment of that male patient will clearly be very important. As some 13–16% of all cohabiting couples suffer from varying degrees of difficulty relating to conception (Iamarrone et al., 2003) and around one-third of these cases involve infertility in the male, it is clear that male infertility is a very common medical problem.

The nature of the problem

In the year 2000, the American Society of Andrology celebrated its 25th anniversary and several past presidents of the Society were asked to comment upon their vision of the future of andrology. The responses were all very positive and each contributor felt that andrology had come a very long way in those 25 years (Troen, 2000). Due to an excellent degree of collaboration that had been attained between scientists in many different disciplines, great strides had been made in the understanding of both the physiology and the pathophysiology of the male reproductive system.

However, it would appear that the standard of care in clinical andrology has not kept pace with that in the science of andrology and this should be a major cause for concern. Some 6–7 years ago, worries were expressed about the standard of care of men with infertility (Jequier and Cummins, 1997; Tournaye, 1997). However, since that time, little seems to have changed and the situation has certainly not improved. Andrology is still not recognized as a surgical specialty even in the USA and seminars and workshops that include clinical rather than scientific andrology are few. Formal teaching in andrology is only occasionally included in the routine training of either the gynaecologists or even the urologists. The reliance on a wide variety of tests on semen as a means of diagnosing male infertility seems to have elevated the spermatozoon to the status of a ‘cellular patient’ (Lenzi, 2003).

In many clinics, the diagnosis of male infertility relies solely upon the findings in a semen analysis. These semen analyses are usually interpreted by a laboratory scientist who knows little or nothing of the clinical history or of the clinical findings.

Changes in semen analyses among infertile patients are usually non-specific and frequently give little indication of the cause of a man’s infertility. These changes have themselves also been known for many years to be an unreliable indication of male infertility (Eliasson, 1971). Thus many patients may be undergoing expensive therapies such as IVF/ICSI where no such treatment is, in reality, indicated. Stories of the clinical mismanagement of male infertility that can be found in the literature may be due simply to a lack of history-taking by the clinicians (Canale and Caietti, 1996).

These examples give strength to the argument that systematic training must be given to clinicians and in particular to the gynaecologists. The reliance of the clinicians on assisted reproductive technology is reprehensible, especially in view of the known complications of these techniques.

At one time, the clinical aspects of male infertility were taken care of almost exclusively by the urologists. However since the advent of assisted reproductive technology, male infertility is very largely, but not exclusively, dealt with by the gynaecologists. Due to the impact of assisted reproductive technology on infertility treatment of the male patient, urologists in many parts of the world—and this includes Australia—are largely losing interest in the whole problem of infertility in the male: indeed few urologists are ever seen attending any of the annual meetings of the Fertility Society of Australia.
### Table I. Common causes of male infertility that are treatable or are untreated without resort to assisted reproduction treatment. Thus before any treatment can be instituted, an accurate diagnosis must be made.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Treatability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ductal obstruction</td>
<td>Untreatable</td>
</tr>
<tr>
<td>Intratubular obstruction</td>
<td>Mostly treatable</td>
</tr>
<tr>
<td>Epididymal obstruction</td>
<td>Treatable</td>
</tr>
<tr>
<td>Vasal obstruction</td>
<td>Mostly untreated</td>
</tr>
<tr>
<td>Ejaculatory duct obstruction</td>
<td>Mostly treatable</td>
</tr>
<tr>
<td>Primary testicular disease</td>
<td>Untreatable</td>
</tr>
<tr>
<td>Retrograde ejaculation</td>
<td>Mostly treatable</td>
</tr>
<tr>
<td>Ejaculatory failure</td>
<td>Mostly untreated</td>
</tr>
<tr>
<td>Varicocele</td>
<td>Treatable but variable response</td>
</tr>
<tr>
<td>Endocrine disease</td>
<td>Mostly treatable</td>
</tr>
<tr>
<td>Genetic disease</td>
<td>Untreatable</td>
</tr>
<tr>
<td>Immune infertility</td>
<td>Untreatable</td>
</tr>
</tbody>
</table>

The gynaecologists in these days of fixed-term specialist curricula are often totally untrained in the examination, let alone the treatment, of an infertile male patient.

Few gynaecologists today have received any formal training in any aspect of general surgery or of urology. A good working knowledge of urology is important in the management of male infertility, as many urological disorders as well as urological operations can themselves be a cause of infertility.

In male infertility, a diagnosis needs to be made and the cause of the infertility must be determined before expensive and possibly unnecessary treatment is imposed upon the patient or, in the case of IVF, upon his partner (Table I). An unnecessary application of IVF may have medico-legal consequences for the treating clinician and examples include the use of IVF in a hypogonadal patient that might otherwise have responded well to gonadotrophin therapy.

It is also well known that maldescended testes are associated with an increased risk of testicular malignancy. The application of IVF to the treatment of male infertility while a testicular tumour goes undiagnosed due to the lack of a clinical examination is a very real and potentially a major medico-legal risk in many infertility clinics today.

As a consequence, I believe that the clinical management of male infertility in many clinics is inadequate and needs to be very considerably improved.

What is a clinical andrologist and what is expected of such a clinician?

The term andrology was probably first coined in the USA at the end of the 19th century. It was re-introduced into medicine by Harald Siebke from Bonn in 1951 (Schirren, 1985). The term covers the study of all disorders of the male reproductive tract to include a variety of pathologies, of which infertility is one of the more common.

At first the term andrology applied solely to the clinical discipline and included the management of disorders such as infertility, genital tract cancer, sexual dysfunction as well as penile and prostatic disease. Indeed even today many andrology textbooks include a chapter on the management of disorders such as Peyronie’s disease and hypospadias. However, over the last 30 years, andrology has grown and now covers the activities of reproductive biologists, embryologists, medical laboratory scientists and even geneticists and ethicists. In modern times, the term clinical andrologist appears to have contracted to mean only those interested in the management of infertility and reproductive endocrinology. However, there are now societies of andrology all over the world that are open to all who are interested in the study of many aspects of the function of the male reproductive tract, but the clinical andrologists of today are largely but not exclusively involved in the management of infertility.

For some 20 years, it has been repeatedly stated by clinicians that both partners should be seen together in an infertility clinic (Steinberger and Rodrigues-Rigau, 1983). However, for such a combined visit to be of any value, it is necessary for the treating clinician to take a history and carry out a clinical examination on both the man as well as the woman and to be able to evaluate any of the problems that may exist in both the male as well as the female partner. As the clinicians that work in infertility clinics today are frequently gynaecologists, one wonders how effective such a visit really is for the infertile couple, as many gynaecologists have had little or no training in any specialty outside of their own.

The clinical andrologist must be able to take a history and examine a male patient with competence. Such an examination should include a digital rectal examination where indicated. The clinical andrologist must also have an understanding of all the pathologies of the reproductive tract that can cause infertility as well as be aware of the possible adverse effects that various urological procedures may have on reproductive function. There are large numbers of urological operations such as transurethral resection, incision of the bladder neck as well as operations that involve the para-aortic lymph nodes that can, themselves, severely compromise reproductive function in a previously fertile man. A variety of orthopaedic operations that are carried out on the anterior aspects of the vertebral bodies can have a similar effect. Thus in the management of male infertility, a good grounding in both general surgery as well as urology can be of great value.

The clinical andrologist should also be capable of carrying out a simple surgical exploration of the male genital tract and be competent to perform the common diagnostic procedures such as vasography that may be needed for accurate diagnosis in male infertility. Collection of sperm from various areas of the male genital tract is now frequently needed for the purposes of treatment. It is simply not good enough to aspirate seminiferous tubules blindly using a needle, as other techniques can now be much more efficient. Vasal washout will yield many millions of sperm from men with ejaculatory failure (Hovatta et al., 1996). There are now much more efficient methods of collecting sperm from a testicular biopsy, particularly among men with severe spermatogenic damage (Schlegel, 1999). Moreover, needle biopsy is not without the risk of further damage to a testis that is already compromised in terms of spermatogenesis (Schlegel and Su, 1997).

As cancer may also be found among infertile male patients, the treating physician must be able to diagnose cancer of the genital tract as well as recognize the potential for this problem...
among their infertile male patients (Moller and Skakkebaek, 1999). The risk of testicular cancer among men with maldescended testes is well known and the diagnosis of carcinoma in situ of the testis and its malignant potential must be clearly understood by all clinical andrologists. The age of the patients attending infertility clinics may also be rising and all infertility specialists will have seen men in their fifth and sixth decades in an infertility clinic. Men of this age are at some risk from prostate cancer and this risk must be borne in mind when evaluating the fertility of men in this age group: a pat on the back concerning a semen analysis may attract medico-legal attention if a concomitant cancer of the prostate has not been identified in these older men.

Genetic disorders are also now becoming an important cause of male infertility. However, although the major chromosomal disorders such as Klinefelter’s syndrome, Noonan’s syndrome and the syndromes that are associated with androgen receptor abnormalities have a clear clinical phenotype, the more common microdeletions that may now be identified on the long arm of the Y chromosome (Vogt et al., 1996) show no such changes and simply present as either oligozoospermia or azoospermia, even though the testicular biopsy findings may show more specificity (Kamp et al., 2001). It is, however, very important that the clinician is aware of the relationship between infertility and genetic disorders that, in the case of the Y chromosome microdeletions, can be inherited by male offspring (Kent-First et al., 1996). The clinician must also be aware of the relationship between varial aplasia and the mutations that can cause cystic fibrosis (Dumur et al., 1990), for congenital aplasia of the vasa deferentia will make up $\geq 10\%$ of all patients that present with obstructive azoospermia (Jequier, 1986).

It is also important that the clinical andrologist be able to diagnose a variety of endocrine disorders that can present in an infertility clinic. Although endocrinopathies only rarely present initially in an infertility clinic (Hull et al., 1985) such disorders are seen from time to time and may also be sent to an infertility clinic by a general endocrinologist. Common examples of endocrine disease that can cause infertility include a variety of causes of hypogonadotrophic hypogonadism as well some induced problems such as the azoospermia that can occur as the result of anabolic androgen abuse (Korkia and Stimson, 1997).

Although erectile failure now rarely presents in an infertility clinic, the clinical andrologist must be competent to evaluate this problem and diagnose its cause. Although the treatment of this condition has been greatly simplified by the advent of the phosphodiesterase inhibitors such as sildenafl and tadalafl, an understanding of this condition as well as the surgical aspects of its treatment must be part of the work of the clinical andrologist.

Infertility is probably the most common reason for a young man to seek treatment for any disorder of the male genital tract. Thus an acceptable standard for the clinical andrologist is that he or she is able to assess and manage most of the causes of infertility in the male that present in an infertility clinic. Clinical andrology is thus a medical as well as a surgical specialty. How then do we best manage male infertility?

Strategies for the management of male infertility

There are several strategies that can be used to overcome the present problem of the management of infertility in the male.

The use of multiple clinicians

One can of course call in experts to see patients with different types of infertility. This system ensures that an expert in a particular field always sees each patient, and this is a system that appears to be commonly used in the USA. In relation to male infertility one might, using this system, feel more confident that the correct diagnosis is being made and that the right treatment is being applied to the patient. However, it is the author’s experience that patients do like to relate to one clinician and do not like to be treated by ‘a committee’. Multiple doctors, especially in private practice, involve multiple appointments and multiple discussions relating to their treatment—as well as an increase in the cost of that treatment. In that situation, patient notes may need to be transferred between clinics and such a system could give rise to confusion resulting in misdirected and false information being given to the patients.

It is also important for the attending clinician to be in a position to assess the relative importance of infertility problems in each partner, especially where there are both male as well as female causes of infertility present. This is very difficult to do when different doctors assess the two partners of an infertility relationship. This situation is exacerbated where the separate clinicians do not understand the nature of the problem in the ‘other’ partner.

Thus although the use of multiple clinicians has some advantages, it is likely that the disadvantages of such a system will outweigh those advantages.

That urologists treat all male infertility

Because of the enormous impact of assisted reproduction treatment and especially of IVF/ICSI on the management of male infertility, urologists appear to be losing interest in the whole problem of infertility in the male and certainly do not seem to want to be involved in any way with these newer technologies. At least in Australia, few urologists regularly read any journal that relates to the subject of infertility and only rarely do we see a urologist making any major contributions to meetings that are devoted to the subject of infertility. Perhaps this is not surprising when one considers that where IVF/ICSI is used to overcome male infertility, it is the female partner that provides the main means for resolving this problem.

Although vasectomy and vasectomy reversal still remain largely within the province of the urologist, more and more men with longstanding but now unwanted vasectomies are being both seen and treated in IVF clinics (Jequier, 1998).

Thus although urologists have all the skills to examine a male patient, their ability to treat infertility is limited. Urologists also have the disadvantage that, like the use of multiple clinicians, they cannot relate to the problems that may be present in the female partner.
That gynaecologists undergo training in urology

Another alternative in solving the problem of the management of infertility in the male is that gynaecologists who treat infertility are required to undergo at least some training in urology. This would at least train the gynaecologist in both history-taking and in the examination of the male genital tract. Training in urology also allows the clinician to undertake some basic investigations such as vasography and testicular biopsy. Training in general urology, however, does not do much to improve a clinician’s understanding of the causation of either male infertility or of its treatment, as little of this is today taught to the average urologist. It is also difficult for the many gynaecologists to find a training position in urology, as these posts are often limited in number and are needed by the urological trainees. Also, some aspects of general urology would be irrelevant to those only interested in dysfunction of the genital tract.

Thus although training in urology would be an advantage to a clinical andrologist, it certainly is not the whole answer for a clinician trying to treat male infertility.

That clinicians in infertility clinics undergo training in clinical andrology

From the above, it would seem that the clinical andrologist must be a physician, a gynaecologist, a surgeon with urological skills as well as being a reproductive endocrinologist, a geneticist and also a sex therapist. This is of course asking a great deal of any clinician. Nevertheless, these are the skills that are required in an average infertility clinic and these requirements must be accepted as necessary by these clinics.

The most important skill that is needed of a clinical andrologist is the ability to take a clinical history and carry out a competent clinical examination, and to ensure that these tasks are associated with valuable and relevant investigations. A reproductive endocrinologist who is unable to examine the prostate and who does not understand the relationship between testicular maldescent and testicular cancer is not acceptable as a clinician in an infertility clinic. A gynaecologist who has no understanding of all the urological causes of male infertility and who cannot examine a male patient with any competence is also unfit to treat infertility. How then do we set about training the clinical andrologist?

What is (desperately) needed is formal training of all infertility clinicians in all aspects of infertility and this must apply in particular to gynaecologists in relation to infertility in the male. The basic training required by anyone treating male infertility must include a detailed knowledge of the anatomy and physiology of the male genital tract. The clinical andrologist must also have an understanding of all the known causes of male infertility, their mode of presentation in the clinic and their possible means of treatment. Teaching is required in history taking, the clinical examination and in the basic investigations that are used in diagnosis. A good working knowledge of sperm and their function is also essential and training should also include time spent in the laboratory.

Conclusions

What is clear is that andrology is still not formally taught to many of those involved in the management of male infertility. This will be very important for gynaecologists that today treat almost all problems relating to infertility in the male.

Andrology thus must be taught formally to all those involved in the management of male infertility. Courses in andrology need to be arranged within an organization such as a fertility society or in a society involved in reproductive medicine that may contain a special interest group. Perhaps the Andrology Special Interest Group seminars that are held each year at many annual meetings relating to human reproduction could one day demonstrate as much interest in clinical andrology as it presently shows towards spermatology. Such groups must also remember that clinical andrology is not simply about the examination of sperm but about the examination of the patient. However, these workshops have to relate to the degree of interest that is expressed in any given subject, and so far the level of interest in clinical andrology appears not to have been very high.

In Australia, great efforts have been made by an organization known as Andrology Australia (Holden and de Kretser, 2003) that produces educational material in the form of printed and video teaching aids relating to a variety of different areas of male health, including infertility. Such an initiative will clearly be most helpful in providing greater familiarity with many of the diagnostic problems that relate to infertility in the male.

The routine use of IVF/ICSI in the management of any patient with an abnormal semen analysis where the cause for the infertility has not even been sought let alone determined must be deprecated. It must be remembered that IVF is not without possible complications for both the mother (Braude and Rowell, 2003) and the offspring (Hansen et al., 2001). These techniques are very valuable but should not be used unless other treatment options have been evaluated and adequately considered.

By understanding the pathophysiology of male infertility, we may be able to find alternative methods of treatment as well as institute means of prevention. In the situation that exists today, clinical andrology will fail to advance and the whole problem of male infertility will never be properly understood.

Acknowledgements

The author thanks Associate Professor Jim Cummins for his helpful advice in the preparation of this paper.

References


Canale D and Caietti L (1996) Infertile male patients are patients, not numbers. Hum Reprod 11:2808.


Submitted on January 5, 2004; accepted on March 4, 2004