An Audit of the Epidemiology, Investigation and Management of Fertility Patients Attending the Gynaecology Clinic of the Public Hospital in Barbados

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ABSTRACT

Objectives: To determine the throughput of infertility patients in the gynaecology clinics at the Queen Elizabeth Hospital, Barbados as the lone public referral centre, and to determine whether these cases are being investigated and treated appropriately.

Methods: We reviewed all notes available prior to gynaecology clinics between February and April 2014. Using the NICE 2013 Fertility guideline as our standard, we collected data on clinical evaluation, advice, investigation and management of those patients with infertility. Upon completion of the study period, the data was reviewed and analysed.

Results: 79 of 1492 notes were fertility related – a 5.4% prevalence. 61.3% had secondary infertility, while 37% had primary. Most (31%) had an infertility duration of 1 year. Anovulation (32.3%) was the most common individual cause. The average female age was 30.9±6.6. Very few individual audit items approached 100%, suggesting room for improvement. 56.4% of patients might have benefitted from a tertiary care referral.

Conclusion: Fertility related referrals represent the fifth-most common problem seen in the gynaecology outpatients department. The majority of these have secondary infertility, and anovulation is the most common diagnosis. Male evaluation is lacking due mainly to non-attendance. Improvement in our practice might be facilitated through education on the guidance available.

Keywords: Audit, Barbados, fertility, gynaecology

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INTRODUCTION

Infertility is variably defined. Couples having regular intercourse usually conceive within one year, so beyond this time initiation of investigation and management is appropriate. This is the position held by the National Institute of Health and Care Excellence (NICE) of the United Kingdom (1), who revised their guidelines regarding the management of such couples in 2013.

The prevalence of fertility problems in Barbados, has not been reported. Boivin et al suggest that in developing countries it is between 6.9 to 9.3%, and in developing countries, 3.5 to 16.7% (2). In the United Kingdom, it is generally held that one in seven couples will experience infertility at some point (1). In Barbados, the gynaecology department of the Queen Elizabeth Hospital is the sole referral service for patients requiring specialist care at a secondary or higher level. Patients requiring fertility evaluation are seen for consultation as part of the general gynaecology clinic by doctors of all grades. At the time of writing, no subspecialist reproductive medicine service nor standard operating protocols are in place.

The aims of this audit were to determine the extent to which infertility services were required or utilized, whether the care given was uniform, and to identify areas for improvement and, thus make suggestions for optimization of care.

METHODS

The audit standard used was NICE guidance from 2013 on the assessment and management of couples with infertility (1). An electronic proforma was created using guideline items prior to the point of necessitating gonadotropin or assisted reproduction treatments, allowing for direct entry of collected data into IBM Statistical Package for the Social Services (SPSS) version 22 for Mac.

This was an audit aimed at service evaluation and improvement, thus no ethical approval was required. The period of study was three months, data collection from 3 February 2014 until 29 April 2014. All gynaecology notes were hand-reviewed ahead of clinics to determine the purpose of each patient's visit, and those related to infertility were selected. DB performed the majority of the extraction. Analysis on completion of the study was using the above named software.

RESULTS

A total of 1462 notes were reviewed, with 79 (5.4%) related to infertility. Thus, infertility was the fifth most common problem seen, after uterine fibroids (29.9%), pelvic organ prolapse (10.7%), chronic pelvic pain (6.1%) and post-menopausal bleeding (5.7%). The prevalence within first visits was 1.9%, and 6.2% among return appointments. Of the 79 relevant notes, 5 were referrals from primary care, none of which had any information or investigation other than difficulty achieving pregnancy, and these were excluded. The remaining 74 notes were for 62 unique patients who were used for the analysis, some having return visits during the audit period.

Demographics

23 patients (37.1%) had primary infertility and 38 (61.3%) secondary. One case (1.6%) could not be determined based on notation. Their duration of infertility (recorded in 35 notes [56.5%]) at the time of first evaluation had mean ± standard deviation (SD) 3.7±3.2, and range 1 to 10 years. Most (31%) had one year of infertility, and 20% had two. Duration of attendance of the clinic ranged from 1-97 months, (mean 23.7 months).

The distribution of factor diagnoses is shown in Table 1.

Female age was available in 59/62 records (95.2%) and ranged from 18 to 44; mean±SD was 30.9±6.6. Male ages were more frequently unavailable, noted for 27/62 (43.5%), and ranged from 23 to 47 with mean±SD 34.74±7.6. This omission may be related to the only 4.8% documentation of both partners being in attendance. The mean number of previous children for those 55 women (88.7%) recorded was 0.73, with 58.1% having zero, and 14.5% having one. Thirty-one (50%) records had information on male proven fertility, with the mean number of children previously fathered being 1.10. Of those, 38.7% had no prior children and 35.5% had one. 9.7% had two or three children respectively, and the remaining 6.5% had four.

History and examination

In Table 2, the proportions of records eliciting the information recommended by NICE are shown, with breakdown into those having been accomplished during initial consultation, or during follow up

Advice

Advice outcomes are reported in Table 3.

Investigations

Table 4 reviews semen analysis requests. Only 1 out of 10 male partners had his semen analysis repeated if abnormal, and after the recommended three month interval. Table 5 reveals female blood test evaluations, and Table 6, tubal patency testing, with risk factors = features in the history suggestive of risk of adhesions/endometriosis. 5 patients had risk factors, while 57 had none.

Treatments

Table 7 gives the results for treatment of the Group II anovulatory disorders, with polycystic ovarian syndrome (PCOS) as the most common example. Only one patient treated with clomiphene underwent ultrasound monitoring for the first cycle. Only one patient of 15 continued clomiphene beyond the recommended six months. 4/11 patients were informed of the potential side effects of metformin. Table 8 reveals frequency of surgical treatments being offered – tubal surgery in the case of those who were diagnosed with Fallopian tube disease, and surgical management of endometriosis for confirmed cases.

Patients not treatable in secondary care

Inevitably, all the patients captured would have been in attendance of the clinic in continued pursuit of fertility. Some were identified, however, as being good candidates for tertiary treatments, which are not yet publicly available in Barbados – 35/62 (56.4%).

DISCUSSION

Infertility is becoming increasingly important, and attention paid to streamlining investigation and management can lead to a more pleasant patient experience, efficient evaluation and more cost-effective use of resources (3). In addition, achieving diagnosis sooner means that suitable treatment can be instituted, and if not available, prolongation of false hope can be avoided. With infertility being the 5th more prevalent gynaecology clinic complaint, improvement in knowledge and practice are certainly relevant.

Patient characteristics

Our finding of 37.1% primary and 61.3% secondary infertility shows a different distribution from that seen in many reports, which suggest a usually equitable distribution (3-5). We in fact found a reversal of the situations found by Masoumi et al(6) and Gowri et al(7). Orhue et al studied a Nigerian population, and found similarly that primary infertility was less prevalent, due to openness in reporting previous pregnancies, including terminations(8). The duration of infertility at first evaluation was relatively long when compared to other papers (3-5), but short compared to another (6). It might be considered that this might be cultural; Barbadian women might be less likely to seek help for infertility earlier on, or might not know about where to attend. In addition with the referral pathway being unclear in the absence of protocols, this might contribute to delays in being seen. The disproportionately low male factor and unexplained infertility seen are likely due to the large proportion of male absences and/or non-compliances with semen analysis requests, as opposed to a reflection of the true picture. Under-diagnosis is a serious possibility here, with usually reported male infertility rates in similar studies being between 18-31% (5, 7-10). Unexplained is usually between 13-38% (5, 7, 9, 10). Our findings for distribution age for both women (3-5) and men (6, 8), were as anticipated.

Menstrual history was very well documented, but other history-taking needs improvement. This area might be addressed by follow-up of referral letters to ensure that both partners attend their appointment, constructing a purpose build history template, and through education and regular audit of staff practices. BMI calculation should be easy to enforce. A dedicated team for these patients as suggested by NICE (11) would foster expertise and likely result in better evaluation.

Chlamydia screening prior to tubal evaluation is recommended to reduce the risk of ascending infection; it is thus disappointing that while 75.8% of patients had tubal checks, only 21% had such screening. Regarding advice, one of the measures instituted following completion of this audit, was the creation of five made-for-purpose information leaflets by our study authors. Prior to this written information would understandably be rarely given. This and other advice should improve patient experience in the clinic, and confidence in their care (12). A recommendation for regular intercourse optimizes sperm availability at time of ovulation, and this was the most frequently given bit of advice in our clinic, but it was documented in less than 50% of cases. Evidence of benefit of lifestyle alterations is variable, but the rates of advice regarding smoking cessation, alcohol reduction and BMI goals were disappointing low. Efforts to improve recommendation of folic acid supplementation for reduction of neural tube defect risk are also important.

With respect to investigations, semen analysis is a basic investigation, as approximately 25% of fertility cases are male factor in origin, so it was hoped that requests would have been 100% rather than 79.1%. Also disappointing was that only 43.6% of those requested yielded results. This could lead to incorrect or incomplete diagnosis in many cases and delayed or inappropriate treatment. This again points to a need for partners to be seen together. Mid-luteal progesterone as a test for ovulation similarly should have 100% compliance. We managed to have 60% done in records reviewed. Basal luteinizing hormone and follicle-stimulation hormone (LH & FSH), done at the beginning of the menstrual cycle, as well as prolactin, are recommended when ovulation is not detected. Prolactin also is required when galactorrhea is present. We noted that sometimes these tests were done when not indicated; targeting these appropriately might have cost savings. All thyroid function tests done were in the absence of a

suggestive history. No patients were screened for rubella immunity; this is usually recommended so that vaccination can be performed pre-pregnancy as indicated. MMR vaccination tends to be commonplace in our community due to the public health program, and rubella is rare, thus the risk from omission of the test is theoretically small.

NICE suggests that laparoscopy be test of choice for tubal evaluation with a history suggestive of risk factors for tubal damage, including pelvic infections and endometriosis, so that treatment might be effected simultaneously (11). Patients without risk factors are more suited to hysterosalpingography (HSG). We found that 40% of those with risk factors received HSG, but given the long waiting time for surgery, and limited availability of operative laparoscopy, these might have been requested on the judgment of the assessing doctor.

In terms of treatment, Clomiphene is the only ovulation induction agent available for use under public funding. .Utilization of treatments for anovulation associated with PCOS was surprisingly low at just above 60%. The majority of cases had six or fewer cycles in line with recommendations (11) and findings in previous studies (10, 13). 56.4% of our patients might have benefitted from tertiary care fertility services. This is in line with Mohamed et al's study (4), which found a 43.9% need.

Limitations of the study included retrospective review, meaning that unless documentation was thorough, details of interaction and discussion might have been missing. The short study duration and small number of patients might mean that the results as a snapshot might not be representative of the entire picture.

Our recommendations following the audit include firstly, consideration should be given to a dedicated fertility team for efficient, effective review. Next, medical and nursing staff should become acquainted with existing fertility guidance. Referral questionnaires and checklists might

be formulated to ensure that as much is done for couples prior to consultation as possible, and couples should be referred together. A purpose-made fertility assessment form would ensure that important history details are not missed; standard operating protocols and checklists would ensure all relevant investigations are completed. Information leaflets should to be produced to aid consultations and for patient reference. Re-audit should be done at regular intervals. Consideration might be given to further work on patient satisfaction and pregnancy rates.

CONCLUSION

Infertility referrals represent the fifth-most common problem seen in the gynaecology outpatients department, at 5.4%. The majority of these have secondary infertility, and anovulation is the single most common diagnosis. Male evaluation is lacking, and this appears rooted in their non-attendance. There is great room for improvement in our practice and this might be facilitated by introducing protocols and supportive paperwork, and by educating gynecologists in our department on the guidance available.

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Table 1. Fertility factor diagnoses

Factor diagnosis	Frequency	Percent
Female – anovulatory (PCOS)	20	32.3
Female – tubal	13	21.0
Female – endometriosis	1	1.6
Total female	**34**	**54.9**
Male factor	**1**	**1.6**
Combined factor	**10**	**16.1**
Unexplained	**2**	**3.2**
As yet uncertain (under evaluation)	**15**	**24.2**

Table 2. History and examination, N=62

	By end of 1st visit		**Subsequently**		**Overall**	
	n	**%**	***n***	**%**	***n***	**%**
Female BMI	4	6.5	4	6.5	8	13
Male BMI	0	0	0	0	0	0
Female occupation	18	29	4	6.5	22	35.5
Male occupation	7	11.3	8	12.9	15	24.2
Female drug use	38	61.3	2	3.2	40	64.5
Male drug use	9	14.5	3	4.8	12	19.3
Menstrual regularity	47	75.8	11	17.7	68	93.5
Cervical smears	34	54.8	9	14.5	43	69.3
Chlamydia screen	5	8.1	8	12.9	13	21

Table 3. Advice. N=62

	By end of the 1st visit		Subsequently		Overall	
	n	**%**	***n***	**%**	***n***	**%**
Written information	0	0	1	1.6	1	1.6
Offered counselling referral	0	0	2	3.2	2	3.2
Regular intercourse	8	12.9	21	33.9	29	46.8
Alcohol reduction - female (Significant history)	2/18	11.1	0/18	0	2/18	11.1
Alcohol reduction – male (significant history)	1/16	6.3	0/16	0	1/16	6.3
Smoking reduction – female (significant history)	4/16	25	1/16	6.3	5/16	31.3
Smoking reduction – male (significant history)	2/21	9.5	3/21	14.3	5/21	23.8
Folic acid	4	6.5	7	11.3	11	17.8
Scrotal temperature	0	0	1	1.6	1	1.6
BMI 20-30 (F)	9	14.5	10	16.1	19	30.6
BMI 20-30 (M)	0	0	0	0	0	0

Table 4. Semen analysis

	Privately / GP / Polyclinic		By end of the 1st visit		Subsequently		Overall	
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Semen analysis *requested and obtained*	4	6.5	11	17.7	12	19.4	27	43.6
Semen analysis requested *with no results*			8	12.9%	14	22.6%	22	35.5
Overall semen analysis requests							49	79.1

Table 5. Female blood tests.

	By end of the 1st visit		Subsequently		Overall	
	n	**%**	***n***	**%**	***n***	**%**
Mid-luteal progesterone (ovulation)	10	16.1	27	43.5	37	59.6
Basal FSH	16	25.8	17	27.4	33	53.2
LH & FSH – indicated	10/31	32.2 (n=31)	9/31	29.0(n=31)	19/31	61.2 (n=31)
LH & FSH - not indicated	6/31	19.4 (n=31)	7/31	22.6 (n=31)	13/31	42(n=31)
Prolactin – indicated	14/25	56 (n=25)	7/25	28 (n=25)	21/25	84 (n=25)
Prolactin – not indicated					7/37	18.9 (n=37)
Thyroid function - not indicated	10	16.1	7	11.3	17	27.4
Rubella immunity	0	0	0	0	0	0

Table 6. Tubal patency testing.

	By end of the 1st visit / GP / Private		Subsequently		Overall	
	n	**%**	***n***	**%**	***n***	**%**
HSG – no risk factors	15/57	26.3 (n=57)	24/57	42.1 (n=57)	39/57	68.4 (n=57)
HSG despite risk factors	2/5	40 (n=5)	0/5	0 (n=5)	2/5	40 (n=5)
Laparoscopy – risk factors	2/5	40 (n=5)	1/5	20 (n=5)	3/5	60 (n=5)
Laparoscopy despite no risk factors	2/57	3.5 (n=57)	1/57	1.8 (n=57)	3/57	5.3(n=57)
Overall HSG					41	66.1
Overall Laparoscopy					6	9.7
Overall Tubal patency testing					47	75.8

Table 7. Treatment for Group II anovulatory disorders, including PCOS

	Frequency	Percentage
Metformin	2/33	6.1
Clomiphene citrate	15/33	45.5
Metformin + Clomiphene	3/33	9.1
Overall	20/33	60.7
Clomiphene-resistant cases		
Clomiphene + Metformin	3/7	42.9
Metformin + ovarian drilling	2/7	28.6

Table 8. Surgical Treatments offered

	Frequency	Percentage
Tubal surgery	3/17	17.6 (n=17)
Endometriosis ablation	0/4	0 (n=0)