Original Article

Pattern of infertility among infertile couple in a secondary health facility in Delta State, South South Nigeria

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ABSTRACT

Background: Infertility is a worldwide problem, affecting 8%–15% of couples in their reproductive age. There is a wide variation in the pattern of infertility in different parts of the world, being highest in the infertility belt of Africa, which includes Nigeria.

Materials and Methods: This was a retrospective descriptive study, involving infertile couples attending the gynaecology clinic of Eku Baptist Government Hospital, a secondary health facility in Delta. The study was conducted from January 1, 2015, to December 31, 2015. Case notes of all eligible couples attending the gynecology clinic were retrieved; relevant information was extracted and subsequently analyzed.

Results: The incidence of infertility was 32.0%. The mean age of infertile women was 34 ± 6 years, mean duration of infertility was 5 ± 3 years, 58.9% of women had secondary infertility, 56.0% of male partners of women had abnormal seminal pattern, resulting in a high (40.6%) contribution of male factor to infertility in our study.

Conclusion: This study has established a 32.0% institutional incidence rate of infertility in Delta State, similar to the findings in other parts of the country. It has also confirmed the predominance of secondary infertility in this part of the country. The high level of abnormal seminal pattern in this study was responsible for the high male factor contribution to infertility in the study area.

Key words: Incidence; infertility; seminal pattern.

Introduction

Infertility is the inability of a couple to conceive following 12–24 months of exposure to pregnancy.[1] It is expected that 50.0% of women could conceive within 3 months of regular unprotected intercourse, 75.0% in 6 months, and 80.0%–85.0% within a year.[2]

Infertility is a sensitive issue in our environment and it is a source of stigma.[3-5]

Infertility is a worldwide problem, affecting 8.0%–15.0% of couples in their reproductive age.[6,7] There is a wide variation in the incidence of infertility, in different parts of the world, being highest in the so-called infertility belt of Africa, which includes Nigeria.[8] Institutional-based studies in some part of Nigeria within the last decades reveal an incidence rate of 4.0% 11.2%, and 48.1%, respectively, from Ilorin (North Central), Abakaliki (South East), and Oshogbo (South West).[9-11]

Male and female partners contribute variably to infertility in a relationship. Infertility is an underlying pathology, with female factors contributing 30.0%–40.0% of causes,

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male factors about 30.0%–40.0%, while both factors and unexplained infertility account for 20.0%–40.0%.[12-14]

Globally, most infertile couples suffer from primary infertility.[1] In Africa, secondary infertility predominates, and this is attributable to a high incidence of sexually transmitted disease, complications of unsafe abortions, and puerperal sepsis.[8,15]

Seminal-tract infections play major contributory roles in male infertility and affects fertility via various mechanisms, including impairing spermatogenesis, sperm function, and obstruction of seminal tract.[13,16,17] Other factors that may lead to male infertility include varicocoele, endocrine disturbance, immunological conditions, and sexual dysfunction.[12,18]

The aim/objective of the study, therefore, is to examine the pattern of infertility among infertile couples attending Eku Baptist Government Hospital and determine the incidence of infertility.

Materials and Methods

This was a retrospective descriptive study, involving infertile couples attending the gynaecology clinic of Eku Baptist Government Hospital, a busy secondary health Facility serving the Niger Deltans in South South Nigeria. The study was conducted from January 1, 2015, to December 31, 2015. Case notes of all eligible couples attending the gynecology clinic during the study period were retrieved and relevant information extracted and transferred onto a pro forma for subsequent computer data analysis.

Inclusion criteria

1. All infertile couples attending the gynecology clinic (for determination of incidence)
2. All infertile couples that completed their infertility investigations (for determination of pattern of infertility).

The pro forma included provisions for age of respondents and clinical characteristics: history of previous conception, duration of infertility, seminal pattern, causes of female infertility, and contribution to infertility by the couple.

Fertility workup was made up of hormone assay (for day 3, follicle-stimulating hormone, luteinizing hormone, prolactin, estrogen, progesterone and testosterone); hysterosalpingography; transvaginal ultrasound scan (to assess for polycystic ovaries, leiomyoma, endometrial plate integrity, and other pelvic pathologies), and semen analysis.

The semen analysis was according to the methods and standard outlined by the WHO, 2010.[19]

The operational definitions were:

- Normospermia: Sperm count of 15 million per milliliter and above
- Oligospermia: Sperm count of below 15 million per milliliter
- Azoospermia: Absence of spermatozoa in the ejaculate
- Asthenozoospermia: Reduced sperm motility – <40.0%
- Teratozoospermia: Reduced sperm morphology – <4.0%.

Oligoasthenoteratozoospermia (OAT) is the condition where all variables – count, motility, and morphology are abnormal.

Data analysis

Data collected were analyzed using the Statistical Package for the Social Sciences software version 22 (IBM Inc., Chicago, IL, USA). Analysis of variables was summarized using means and standard deviations. Frequencies and proportion were used for qualitative variables.

Ethical consideration

Ethical approval was obtained from the Ethics Committee of Eku Baptist Government Hospital (ADME: 201) and pro forma was made anonymous for confidentiality.

Results

During the study period, a total of 678 new gynecology cases were seen, out of which 215 cases were for infertility, giving an incidence of 32.0%. Only 180 (84.0%) completed their fertility workup, and therefore available for analysis.

The mean age of the women was 34 ± 6 years, with a range of 16–45 years. Fifty-five (30.6%) women were in the age range of 26–30 years, followed by 49 (27.2%) who were within the 21–25 years' age group. Only 5 (2.8%) women were 20 years or below [Table 1].

The mean duration of infertility was 5 ± 3 years, with a range of 1–12 years. Sixty-one (33.9%) had 4–6 years of infertility. About 70.0% or 120 of the women had infertility spanning 1–6 years. 28 (15.6%) had infertility of up to 10 years and above [Table 2].

Figure 1 shows that 106 (58.9%) of the subjects had secondary infertility, while 74 (41.1%) had primary infertility.

Spermatozoa pattern in Table 3 shows that 79 (44.0%) male partners had normal sperm parameters and 56.0% had abnormal spermatozoa pattern. Nearly 25.0% had oligospermia, 11.0% with asthenozoospermia, 10.0% teratozoospermia, 7.0% with OAT, and 6 (3.0%) of the men had azoospermia.

Tubal obstruction accounted for 42.0% of female factor in fertility. Uterine factor was the finding in 35 (30.0%) women,

while ovarian factors were responsible for 28.0% of female factor infertility [Table 4].

Male factor infertility was the only pathology in 73 (40.6%) of the couples. In 31.1% of the women, only female factors were found, while in 28 (15.6%), both male and female factors were identified. Approximately 13% (12.7%) of couples had unexplained infertility [Table 5].

Discussion

The 32.0% incidence rate of infertility in this study is consistent with the different rates reported in institutional-based studies conducted in the country.[9-11] Our rate is higher than findings in the North Central and South East, but lower than that in the South West, with a rate of 48.1%.[11] These rates are influenced by sample sizes and cultural differences: In our study, the high contribution of male factor may be related to some sociocultural practices that need to be determined.

Table 1: Age group distribution of infertile women

Age group	Frequency (%)
16-20	5 (2.8)
21-25	49 (27.2)
26-30	55 (30.6)
36-40	46 (25.5)
>40	25 (13.9)
Total	180 (100.0)

Table 2: Frequency distribution of duration of infertility

Duration (years)	Frequency (%)
1-3	59 (32.8)
4-6	61 (33.9)
7-9	32 (17.7)
10-12	28 (15.6)
Total	180 (100.0)

Table 3: Spermatozoa pattern of male partners (2010 world health organization criteria)

Sperm parameter	Frequency (%)
Normospermia	79 (44.0)
Oligospermia	45 (25.0)
Asthenozoospermia	20 (11.0)
Teratozoospermia	18 (10.0)
Oligosthenoteratozoospermia	12 (7.0)
Azoospermia	6 (3.0)
Total	180 (100.0)

Table 4: Distribution of female factor infertility

Causes	Frequency (%)
Tubal obstruction	50 (42.0)
Uterine factor	
Fibroid Uterine synechia	35 (30.0)
Ovarian factor	
Ovarian failure Polycystic ovary syndrome Hyperprolactinaemia	33 (28.0)
Total	118 (100)

The mean age of 34 ± 6 years is similar to the 33.8 ± 5.2 years in a study conducted in Lagos by Adegbola and Akindele.[20] These rates are, however, higher than rates of 31 ± 8.8 and 27.5 ± 9.2 in a study conducted in India.[21] The reason(s) for these differences is not obvious. Cultural practices that influence the age of marriage could be a contributor. The quality of oocyte, however, begins to decline from a woman's mid-30s, and in terms of her ovarian reserve, she has 12.0% of her reserve at age 30 and only 3.0% at age 40.[22]

The mean duration of infertility of 5 ± 3 years is slightly longer than the 4.1 ± 3 years reported in Calabar by Ekere *et al*.[23] Reasons for the delayed presentation range from patronage of faith-based health practitioners to presentation at tradomedical healers, with the latter often resulting in the complication of clinical conditions at presentation of patients.

The predominance of secondary infertility among Africans was replicated in our study. Though the 59.0% secondary infertility in this study was lower than the rates of 67.2% and 73.2% that were reported from Northwest and Southwest Nigeria and 71.6% from Northern Ghana, respectively.[24-26] The higher incidence of secondary infertility, in comparison with the more developed parts of the world, is due to the high incidence of genital tract infection among Africans.[8,15]

The 56.0% incidence of abnormal semen pattern in our study is higher than the findings by Tabong and Adongo[26] at Ekiti in which 38.2% of the women had abnormal seminal profile. The reason for this difference is not obvious. This

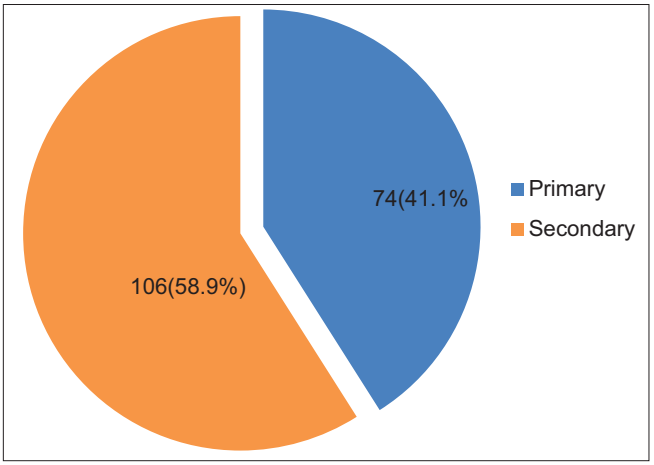

Figure 1: Pie chart on type of infertility

Table 5: Contribution to infertility by couple

Gender factor	Frequency (%)
Only male factor	73 (40.6)
Only female factor	56 (31.1)
Male and female	28 (15.6)
Unexplained	23 (12.7)
Total	180 (100.0)

high incidence resulted in a high (40.6%) contribution of male factor to infertility in our study. Sperm abnormality is usually associated with distortion in the process of spermatogenesis, which could be pretesticular (hormonal), testicular (chromosomal) or post-testicular (disorder in transportation, ejaculation, and infections).[4,16,17] Single-factor abnormalities such as low sperm count-oligospermia (25%) and poor motility-asthenozoospermia (11%) are regarded as the leading causes of male infertility in the literature.[17,27,28] The presence of male factors, especially multiple male factor abnormality, could be associated with poor outcome with conventional methods in the treatment of infertile couples.[29]

Tubal factor is reported to account for 25%–35% of subfertility in Western literature.[30] The 42% tubal occlusion, we found in our study, is lower than the 63.6% in the northern part of Nigeria.[24] Proximal tubal obstruction secondary to tubal spasm or intratubal debris may be a reversible condition. Pelvic inflammatory disease is a major clinically unsuspected reason for tubal infertility.[30]

The 40.6%, male factor infertility in our study, was higher than the 34.5% from Calabar and the 19.7% from the North, respectively.[23,24] Infective reasons have been variously cited for male factor infertility.[14,16,17] There could be other undetermined etiological factors responsible for the high abnormal seminal pattern in this study.

Conclusion

This study has established a 32% institutional incidence rate of infertility in Delta State, similar to the findings in other parts of the country. It has also confirmed the predominance of secondary infertility in this part of the country, similar to what is obtainable elsewhere. The high level of abnormal seminal pattern in this study is responsible for the high contribution of male factor to infertility in the study area, a finding that raises the need for further work on possible etiological factors for the high abnormal seminal pattern.

Limitations

This was a retrospective study with a relatively small sample size. Laparoscopy and dye test would have been useful investigative procedure in our study. This was however not available in this center.

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Conflicts of interest

There are no conflicts of interest.

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