Original Article

The Profile of Infertility Couple at Kathmandu Model Hospital

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ABSTRACT

Introduction: To evaluate the demography and clinical profile of infertility couples attending OPD so that cause can be identified and treatment can be planned accordingly.

Methods: This was a prospective observational study done at Gynaecology department, Kathmandu Model Hospital from March to June 2023. Total of 64 patients with infertility were included in the study .Semen analysis of male partner was done after 3 days of abstinence. Baseline pelvic ultrasound of female partner was done on the same day to rule out any pelvis pathology. On 2nd or 3rd day morning of menstruation blood test of female partner was done for basal follicle Stimulating Hormone (FSH), leutinizing hormone (LH), estradiol (E2), thyroid stimulating hormone (TSH), prolactin, antimullerian hormone (AMH) and Blood sugar. Hysterosalphingography (HSG) was done on 7-10th day menstrual cycle.

Results: The mean age of female was 31.26 years and male was 33.98 years. Primary infertility was 62.5% and secondary infertility was 37.5%.Female cause of infertility was highest 46.88%, male factor was 21.88%, both factor was 20.31% and unexplained was10.94%. Ovulatory dysfunction and tubal factor infertility was high. Men had normal semen analysis in 57.81% and asthenozoospermia was found in 28.13%.

Conclusion: In the present study, ovulatory dysfunction was leading cause of female infertility followed by tubal pathology. In male asthenozoospermia was commonest.

Keywords: Hysterosalpingography, Infertility, semen analysis.

Introduction

Infertility is failure to conceive after unprotected intercourse for one year.[1] Primary infertility means the couple has never conceived, whereas secondary infertility means prior pregnancies have occurred, not necessarily live pregnancy.[2] Infertility affects about 10-15 % of reproductive age couple.[3] In our society child bearing is a social and family responsibility of a couple. In most of the time females face the pressure of infertility, resulting in depression. In urban society, late marriage, postponing childbearing due to studies and career infertility problems are increasing. In general infertility evaluation is done after failure to conceive in 1 year or if the age of woman is 35 years or more investigation is done in 6 months of unprotected intercourse.[3] Aneuploidy and poor pregnancy outcome is common after 35 years of age in women. The main causes of infertility are male factor 25%, Ovulatory 27%, Tubal/uterine 22%, others 9%, Unexplained 17%.[3] Before starting investigation complete history of the couple should be obtained. Attention to height, weight, body habitus, hair distribution, thyroid gland and pelvic examination should be given while examining female partner. Male partner should be examined by urologist if history suggests.[4]

The rationale of this study was to recognize reversible, treatable and modifiable risk factors and select patients for assisted reproductive technique and genetic counseling.

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The present study was designed to evaluate the demography and clinical profile of infertility couples attending OPD so that cause can be identified and treatment is planned accordingly.

Methods

This was a prospective observational study done at Gynaecology department, Kathmandu Model Hospital from March to June 2023. Ethical approval was obtained from Institutional review Committee of phect-NEPAL Kathmandu Model Hospital. Data were collected in predesigned data collection proforma. Total of 64 couples with infertility were included in the study after obtaining informed consent. Those who refused to get enrolled were excluded from the study. Detail history of both partners was obtained. Physical examination of all the female partners was done at the clinic. Male partner was examined by urologist when required. Semen analysis of male partner was done after 3 days of abstinence. Semen was collected at the laboratory in a clean sterile container and analysis was done manually. WHO 2010 manual was followed.[5]

Baseline pelvic ultrasound of female partner was done on the same day to rule out any pelvis pathology. On 2nd or 3rd day morning of menstruation 10 ml of blood was drawn at the laboratory from the female partner for testing basal follicle Stimulating Hormone (FSH), leutinizing hormone (LH), estradiol (E2), thyroid stimulating hormone (TSH), prolactin, antimullerian hormone (AMH) and Blood sugar. Hysterosalpingography (HSG) was done on 7-10th day menstrual cycle at radiology department. Gastrografin 70% dye was used. Azithromycin, hyoscine N butyl bromide and brufen were given 1 hour before the procedure. All the reports were collected on the proforma and later stored in excel sheet.

Results

A total of 64 couples with the diagnosis of infertility were included in the study. Those who did not return with reports were excluded. The mean age of female partner was 31.26 years and age range was 23-42 years. Male partner's mean age was 33.98 years with the range of 26-45 years. The highest number (37.50%) of males were in 31-35 years, females were (40.63%) in 26-30 years. Similarly lowest number of both males (7.81%) and females (1.56%) were in 41-45 years. Equal numbers of both partners were graduate (43.75%). Fifty percent of men were businessmen and 48.44% were service holder whereas 37.50% females were service holder and 20.31% were in business. None of the women were smoker, 70.71% were social alcohol drinker. Majority of men were smoker (70.71%) and social alcohol drinker ((62.50%). Smoking and alcohol has negative impact on semen. Most of the couples were suffering from primary infertility (62.50%) and 37.50% were having secondary infertility (Table 1). Highest number of women with primary infertility was in 26-30 years (29.69%) and secondary infertility was 31-35 years (15.63%).

Table 1: Socio-demographic features of infertility couples (n=64)

Variables	Male	Female
Age		
21-25	0	7 (10.45%)
26-30	16 (25%)	26 (40.63%)
31-35	24 (37.50%)	21(32.81%)
36-40	19 (29.69%)	9 (14.06%)
41-45	5 (7.81%)	1 (1.56%)
Education		
School	9 (14.06%)	19 (29.69%)
Higher secondary	13 (20.31%)	7 (10.45%)
Graduate	28 (43.75%)	28 (43.75%)
Master	14 (21.88%)	9 (14.06%)
Illiterate	0	1 (1.56%)
Profession		
Business	32 (50%)	13 (20.31%)
Service	31 (48.44%)	24 (37.50%)
Farmer	1 (1.56%)	0
Housewife	NA	27 (42.18%)
Alcohol		
No	17 (26.56%)	19 (29.69%)
Social	40(62.50%)	45 (70.31%)
Regular	7 (10.45%)	0
Smoking		
No	19(29.69%)	64 (100%)
Yes	45 (70.31%)	0
Duration of infertility		
1-3 years	43 (67.19%)	
4-6 years	17 (26.56%)	
7-9 years	3 (4.69%	
>9 years	1 (1.56%)	
Type of infertility		
Primary	40 (62.50%)	
Secondary	24 (37.50%)	

Investigations were done to find out the causes of infertility. Female cause of infertility was seen in 30 women (46.88%), male cause was seen in 14 men (21.88%), both male and

female cause in 13 couples (20.31%) and no cause was found in 7 couple (10.94%) (Fig 1).

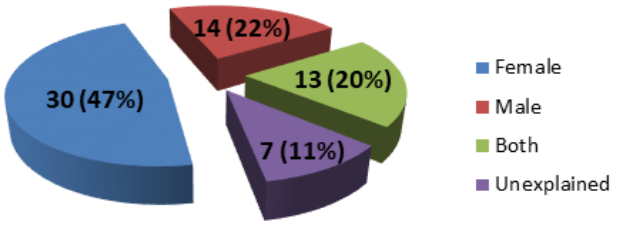

Fig 1: Causes of infertility

Semen of all the men was analyzed. Thirty seven (57.81%) had normozoospermia, 18 (28.13%) had asthenozoospermia, 2 (3.13%) had oligospermia, 5 (7.81%) had oligoasthenozoospermia, teratozoospermia and asthenoteratozoospermia was 1 in each (1.56%) (Table 2). Interestingly, no one was azoospermic. Twelve out of eighteen men with asthenozoospermia were smoker and all with oligospermia were also smoker.

Table 2: Semen analysis report

Age	Normozoo spermia	Astheno Zoo spermia	Oligo spermia	Oligo astheno zoospermia	Teratozoo spermia	Astheno terato zoospermia
26-30	9	3	1	3	0	0
31-35	12	10	1	2	1	0
36-40	14	3	0	0	0	0
41-45	2	2	0	0	0	1
Total	37 (57.81%)	18(28.13%)	2 (3.13%)	5 (7.81%)	1 (1.56%)	1 (1.56%)

Eleven (17.19%) of the women had one live birth and 13 (20.31%) had history of spontaneous abortion. None of the women were under weight, 26 (40.63%) had normal BMI, 28 (43.75%) were overweight and 10 (15.63) were obese. Most of the women (70.31%) had normal menstrual cycle and 29.69 % had oligomenorrhoea. Investigations results of female are shown in Table 3. AMH was in normal range in 37.5%, low in 23.44% and high in 39.06%. Five women had bilateral tubal block and 12 had one tube block as seen in hysterosalpingography. Pelvic ultrasonography showed uterine fibroids in 9.38%, endometriosis in 3.13%, PCOM in 17.19% and 3.13 % had ovarian tumour. Thyroid disorder was seen in 12 women.

Table 3: Investigations of female infertility

Variables	Frequency	Percentage %
AMH		
Normal (1.1-3.5 ng/ml)	24	37.50
Low (<1.1 ng/ml)	15	23.44
High (>3.5 ng/ml)	25	39.06
Hysterosalpingogram		
Normal	47	73.44
Bilateral tubal block	5	7.81
Right tubal block	7	10.94
Left tubal block	5	7.81
USG		
Normal	43	67.19
Fibriod	6	9.38
Endometriosis	2	3.13
PCOM	11	17.19
Ovarian tumors	2	3.13
Diabetes mellitus	2	3.13
Hyperprolactinemia	2	3.13
Thyroid disorder	12	18.75
SCH	7	10.94
Hypothyroid	5	7.81
Endometrial tuberculosis	1	1.56

Study of serum hormone level is important to find out the ovarian reserve, Ovulatory dysfunction and plan for treatment. Ovulatory dysfunction was found in 62.5%. The AMH was 4.304.32 ng/dl. Highest AMH was 22.14ng/dl at 33years of age and lowest at 0.019ng/dl at 37 years of age. Twenty five (39.06%) female had high AMH and 15 (23.44%) had low AMH. Twelve females with low AMH were above 31 years of age. Ovarian reserve declines with increasing age. Similarly hyperprolactinemia and thyroid disorder causes irregular menstrual cycle and anovulation. The mean hormone test result is shown in table 4.

Table 4: Serum hormone levels

Hormone	Mean ± SD
AMH	4.30 ± 4.32 ng/ml
FSH	6.91 ± 2.03 mIU /ml
LH	8.53 ± 5.55 mIU /ml
Estradiol	32.85 ± 16.74 pg/ml
Prolactin	14.88 ± 9,86 ng/ml
TSH	2.96 ± 1.86 µIU/ml

Discussion

Infertility problem is increasing, so a comprehensive evaluation is important for prevention and plan of treatment. There are many national and international studies on causes of infertility, investigations and treatment modalities. Study from Nigeria showed prevalence of infertility 15.7%. Secondary infertility was high (67%).[6] Where as in our study primary infertility (62.50%) was higher than secondary infertility (37.50%). This is comparable to other studies from Nepal[7,8] Saudi Arabia[9], Iran[10], Banbladesh[11,12] Srilanka[13] and Pakistan.[14] Poorly managed pelvic infection resulting in tubal block might be the cause in Nigeria as pelvic infection was seen in 78 % cases. Their semen analysis showed 12.6% were Azoospermia, 13% were severe oligospermia and 26.6% were asthenozoospermia. In our study no one was azoospermic, but asthenozoospermia was comparable. Another retrospective study showed 68% men had Azoospermia.[15] The most common findings in ultrasound were uterine fibroids (8.6%) and polycystic ovary (PCO) 8.6%. which was almost similar with the present study. HSG showed tubal blockage of almost similar result. The study did not include hormonal analysis.[6]

Pratima Neupane et.al studied causes of infertility at infertility centre in Kathmandu. Highest numbers of infertile females were in 20-30 years (51%) and similarly males were 31-35 years (45%) which is comparable to our study.[16] About 48.44% women were above 31 years, comparable to another study. Ovarian reserve declines with age resulting in infertility.[17]

Among females 37% had ovarian cyst, 15% had abnormal uterine bleeding, 9% had fibroids, 9.69% had pelvic infection, and 21.8% had thyroid disorder. In our study no one had abnormal uterine bleeding, we had only 3.13% ovarian tumour and thyroid disorder was similar. We did not rule out pelvic infection. Seventeen percent male had oligospermia, and 5.5% had Azoospermia. We found higher number (28.13%) of asthenozoospermia. Hormonal analysis and HSG were not included in this study.[16]

Study from Rajshahi city Bangladesh showed male and female at 25-34 years suffering from infertility were 51% each which is comparable to the present study. Higher education level was similar to our study (43.75%). Due to increase in literacy, marriage and child bearing is postponed, resulting in infertility. The studies showed 68% were trying to conceive for more than 5 years but in our study 67.19% were trying for 1-3 years.[18]

Study from Iran showed Ovulatory disorder (39.7%) and male factor (29.1%) as most common causes of infertility. other causes were endometriosis 8.2%, tubal 3.7%, unexplained 14.4%, more than one cause 17%.[19] Compared to this study, our study showed highest Ovulatory dysfunction (62.5%), second (26.56%) was tubal factor. lesser endometriosis (3.13%). This is similar to study from teaching hospital.[17] Our study had 46.88% female factor, 21.88% male factor, 20.31% both factor and 10.94% unexplained infertility. Female factor was commonest in other studies also.[11,20,21] Another retrospective study showed higher percentage of unexplained infertility, 48.4% in primary and 54.4% in secondary infertility. This may be due to limitation of investigations.[22]

In our study tubal cause of female infertility was second common but many studies from Pakistan and Bangladesh showed tubal pathology as leading cause of female infertility.[14,20]

High BMI, smoking and higher education was more common in infertile women in Iran.[19]

In our work all the women were non smoker and most were overweight with mean BMI of 26.30± 3.77. High BMI causes Ovulatory dysfunction and insulin resistance. Obese women may have regular menstrual cycle with infertility. The study showed 59.38% had high BMI comparable to another study.[17] High BMI causes menstrual irregularities. Women with overweight has one time and women with obesity has 4 times chance of infertility compared to normal weight.[23]

In the current study higher numbers of males were smoker (70.31%). Studies have shown that there is decline in semen volume, sperm concentration, motility and morphology

with increase in number of cigarette smoked per day.[24]

Conclusions

Problem of infertility is increasing due to delaying marriage and child bearing for career and higher education. In the present study, ovulatory dysfunction is leading cause of female infertility followed by tubal pathology. In male single investigation was done as semen analysis.

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Conflicts of interest None

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