Assessment of Etiological Factors of Female Primary Infertility

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Authors’ contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

ABSTRACT

Aims: The aim of the study was to assess the etiological factors of female primary infertility.

Place and Duration of the Study: This prospective study was conducted in the Gynaecology clinic of Sree Balaji Medical College and Hospital, Chennai, from August 2016 to February 2018.

Methods: All the reproductive age group women coming to Gynaecology opd out patient clinic with history of anxious to conceive. Those patients who satisfy the above criteria those have been selected for the study.

The test has been carried out in hospitalized patients:

1. A detailed history were taken.
2. General physical and systemic examination were done.
3. Ovarian factors and uterine factors ruled out.
4. For tubal cannulation.

The data collection technique adopted in this technique is structured questionnaire on the evaluation of infertility in couple of less than 35 years of age in a period of infertility less than 5 years from infertility OPD for one and half years of Sree Balaji Medical College and Hospital. Detailed history obtained from the couple and evaluate, informat ion with the help of various investigation in evaluating an infertile couple [1].

Results: Age: The prevalence of infertility in the age group 21 – 29 years were about 76% in women. Menarche This showed that maximum number of female attain menarche at the age group

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of 12 to 14 years. In our study, it is observed that there is a strong relation of infertility with BMI, the prevalence of infertility increases as BMI Increases in population. 22% of the women have BMI above 30 (obese). In our study, 8% of the women has hydrosalpinx, 4% of the women had fibroids and 6% of the women has polyps. We observed that 4% of the women had unilateral fallopian tubal block and 2% had bilateral fallopian tubal block [2].

**Conclusion:** In modern era of economically growing world we have concluded that the prevalence of infertility is about 76% in women age group of 21-29, 40% of the women has attained menarche at 12-14 years, observed hydrosalpinx in 8%, polyps in 6% and fibroids in 4% [3].

**Keywords:** Infertility; etiological factors; obesity; polyps; hydrosalpinx.

### 1. INTRODUCTION

According to WHO, positive reproductive health of a woman is a state of complete physical, mental and social well-being and not merely absence of disease related to reproductive system and functions [4]. Infertility implies apparent failure of a couple to conceive, while sterility indicates absolute inability to conceive, for one or more reasons. If a couple fails to achieve pregnancy after 1 year of ‘unprotected’ and regular intercourse, it is an indication to investigate the couple. This is based on the observation that 80% of normal couples achieve conception within a year. It is observed that 50% conceive within 3 months of regular, unprotected intercourse, 75% in 6 months and 80–85% conceive within a year [5]. (1) Primary infertility if conception has never occurred. Infertility means not having children after one year of regular sexual life without usage contraception techniques (1). Infertility is one of the major health care problems in all societies worldwide. The average prevalence of infertility in developed countries is 3.5-16.7% and in developing countries is 6.9-9.3% (2). Causes of infertility are numerous such as anatomical, physiological and genetic factors. Many environmental and acquired factors also influence fertility and may lead to infertility. Menstrual and ovulation dysfunction and uterine factors are the most common causes of impairment in fertility. Etiology of infertility prevalence and patterns of causes of infertility in different regions are diverse. This discrepancy is due to existence of differences in environmental conditions associated with reproductive behaviors, such as age at marriage, environmental pollution, smoking and alcohol abuse, changing in lifestyle and diet [6].

### 2. MATERIALS AND METHODS

A prospective study was planned on women with primary infertility: All the reproductive age group women those were came to Gynaecology opd out patient clinic with history of anxious to conceive. Those patients who satisfy the below criteria has been selected for the study (Table 1).

#### 2.1 Inclusion Criteria

- Primary infertility who are less than 35 years of age.
- Couples practicing regular timed intercourse without using contraception.
- Couples aware of fertile period [7-10].

#### 2.2 Exclusion Criteria

- Patients who are on hormones, anti-psychotic drugs.
- History of pelvic inflammatory disease, endometriosis.
- History of tuberculosis.

The test has to be carried out in hospitalized patients.

1. A detailed history were taken.
2. General physical and systemic examination were done.
3. Ovarian factors and uterine factors ruled out.
4. For tubal cannulation [11-14].

The data collection technique adopted in this technique is structured questionnaire on the evaluation of infertility in couple of less than 35 years of age in a period of infertility less than 5 years from infertility OPD for one and half years of Sree Balaji Medical College and Hospital. Detailed history obtained from the couple and evaluate, information with the help of various investigation in evaluating an infertile couple. Obtaining the history would be as followed:

Day 1: Detailed history collection from the couple, including menstrual history, coital history, husband history with any significant past history.
Day 2: Baseline scan for the female to evaluate any uterine structural abnormalities and to look for pre-antral follicles and hormonal study.

Day 8: To do hysterosalpingography to rule out any pathological tubal factor association with fallopian tube or D-lap [15-18].

If any abnormalities to be found at this factor, refer the patient to higher center for tubal reconstruction surgery.

Day 9: To look for any spontaneous ovulation in a woman through follicular tracking, starting from the day of the cycle and main factor found to be normal.

If patient is not conceiving with 3 cycle of ovulation, indication to assess cervical factors to plan for intra uterine insemination and follow the patient. History of evidence of any hormonal irregularities has been corrected [19-20].

3. RESULTS

In this study maximum female 38 was found in age group of 21-29 years followed by 12 cases in the age group of 31-34 years.

4. DISCUSSION

A descriptive approach is used to assess and evaluate etiological factors in cases of female primary infertility. The study was conducted at Sree Balaji Medical College and Hospital in Chrompet. After taking informed consent, A structured questionnaire is prepared to find out the etiological factors (Table 1).

The sample size for this study is 50 couples.

**Age:** The prevalence of infertility in the age group 21 – 29 years were about 76% in women. The prevalence was observed 24% of the women from age group 31 to 34 years. This showed that increase in age is an important risk factor for infertility (Table 2).

**Menarche:** In our study, the mean age of attaining menarche is 12.5 years. The 40% age group of females at tained menarche at age group of (12-14 years) and 16% attained at the age of 11 years and the remaining 4% attained at the age group of (15-17 years). This showed that maximum number of female attain menarche at the age group of 12 to 14 years (Table 3).

**Menstrual Cycle:** In the present study, 44% of the women has history of irregular menstrual cycle, 56% had regular cycle (Table 4).

**Duration of Infertility:** In our study, duration of infertility is 1 to 3 years in 27% of the couples, 4 to 6 years in 36% couples, 7 to 9 years in 22% of couples and above 10 years in 15% couples.

**BMI:** In our study, it is observed that there is a strong relation of infertility with BMI, the prevalence of infertility increases as BMI increases in population. 22% of the women has BMI above 30 (obese). 54% of the women are with BMI 25 – 29.9 (over weight), 18% are with 18.5 – 24.9 (normal) and 6% are with BMI <18.5 (underweight) (Table 5).

**Female Structural Abnormalities:** In our study, 8% of the women has hydrosalpinx, 4% of the women had fibroids and 6% of the women has polyps (Table 6).

**Base Line Scan:** In the present study, base line scan showed 5 to 15 antral follicles in 46% of the women of age group (20 -29) and in 14% of the women of age group (30-35). Base line scan showed less than 5 antral follicles in 34% of the women (20-29) age group and in 6% of the women (30-35) age group (Table 7).

**Hysterosalpingogram:** In our study, we observed that 4% of the women had unilateral fallopian tubal block and 2% had bilateral fallopian tubal block.

### Table 1. Age group of respondents

| S. no. | Age group     | Female | Percentage |
|--------|---------------|--------|------------|
| 1      | 21-29 years   | 38     | 76%        |
| 2      | 31-34 years   | 12     | 24%        |
| 3      | Above 35 years| 00     | 0%         |
|        | **Total**     | 50     |            |

In this study female attend menarche at the age of 11 was found to be 8 followed by 40 cases in the age group of 12-14 years followed by 02 cases in age group of 15-17 years.
Table 2. Female patients age at menarche in years

| Age at menarche | Patients | Percentage |
|----------------|----------|------------|
| 11             | 08       | 16%        |
| 12-14          | 40       | 80%        |
| 15-17          | 02       | 04%        |
| >18            | 0        | 0%         |

In this study maximum 22 women had regular cycle 28 had irregular cycle.

Table 3. Female patients menstrual cycle

| Menstrual cycle | Patients | Percentage |
|-----------------|----------|------------|
| Regular         | 22       | 44%        |
| Irregular       | 28       | 56%        |

In this study 3 women are less than 18.5 BMI (underweight) followed by 9 women 18.5 to 24.9 BMI (healthy) followed by 27 women BMI 25 to 29.9 (over weight) followed by 11 women BMI above 30 (obesity).

Table 4. Female body mass index (BMI)

| BMI chart     | Normal values       | Female | Percentage |
|---------------|---------------------|--------|------------|
| Underweight   | Less than 18.5      | 03     | 06%        |
| Healthy       | 18.5 to 24.9        | 09     | 18%        |
| Over Weight   | 25 to 29.9          | 27     | 54%        |
| Obesity       | Above 30            | 11     | 22%        |
| Total         | 50                  | 100%   |

In this study 2 cases had polyp followed by 2 cases had fibroid followed by 4 had hydrosalpinx.

Table 5. Female structural abnormalities

| Structural abnormalities | Cases | Percentage |
|--------------------------|-------|------------|
| Polyps                   | 03    | 06%        |
| Fibroids                 | 02    | 04%        |
| Hydrosalpinx             | 04    | 08%        |
| Total                    | 09    | 18%        |

In this study maximum at the age of 23-29 years had AFC (5-15 mm) followed by 30-35 years. 20-29 years of age 17 cases had (less than 5) AFC followed by 30-35 years had 3 AFC.

Table 6. Base line scan

| Age (years) | Antral follicular count (Follicles) | Percentage | Percentage |
|-------------|-------------------------------------|------------|------------|
| 5-15        |                                     |            |            |
| N=50        |                                     |            |            |
| 20-29 years | 23                                  | 46%        | 17         | 34%        |
| 30-35 years | 7                                   | 14%        | 03         | 06%        |

In this study 2 cases had unilateral block 1 case had bilateral block.

Table 7. Hysterosalpingogram

|                | Uterus | Unilateral block | Bilateral block |
|----------------|--------|------------------|-----------------|
| 20-34 years    | Normal | 02               | 01              |

5. CONCLUSION

The present study assessed and evaluated etiological factors of primary infertility in couple at Sree Balaji Medical College and Hospital and we have concluded that the prevalence of infertility is about 76% in women of age group 21-29 year. We have observed the age of attaining menarche in all the women who has included in the present study. 40% of the women has attained menarche at 12-14 years. We have observed the relation of infertility with menstrual cycle irregularities we have observed that 44% of the women has regular menstrual cycle and 56% of the women has irregular menstrual history. We have observed the relation of BMI to infertility and concluded that 54% of the women has 25-29.9 (over weight) and 22% of the women has BMI above 30 (obesity). We have evaluated all the women who were included in the study for...
structural abnormalities and we have observed hydrosalpinx in 8%, polyps in 6% and fibroids in 4%. We have taken base line scan for all the women who were included in the study on day 2 of the menstrual cycle and observed 34% has less than 5 antral follicles in the age group (20-29 year). We have done hysterosalpingogram for all the women and observed unilateral tubal block in 2 women and bilateral tubal block in 1 women in age group 20-34 years.

CONSENT AND ETHICAL APPROVAL

As per university standard guideline patients' consent and ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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