INFERTILITY

Infertility is defined as the state in which a couple wanting a child cannot conceive after 12 months of unprotected intercourse (Muellar and Daling 1989; Thonneau et al., 1991) Globally the incidence of infertility is estimated to be about 13-18 % (Hull et al., 1985; Thonneau et al., 1991; Jones and Toner 1993; Irvine 1998; Mullar and Daling 1989) in the human population regardless of race and ethnic group.

Infertility is either primary, when no pregnancy has ever occurred, or secondary, where there has been a pregnancy, regardless of the outcome. About 67-71% and 29-33% of patients have primary and secondary infertility, respectively (Muller and Daling 1989; Thonneau et al., 1991; Irvine 1998). Female and male factors can both contribute to infertility. In men, the main causes of infertility are oligospermia, asthenospermia, teratospermia, and azoospermia which account for 20-25% of cases (Egazoue et al., 2000 and Hargreave 2000). In women the major causes of infertility, accounting for 50% of cases, are ovulation disorder and tubal damage. Other causes include endometriosis, and reproductive tract disease (Spira 1986; Muller and Daling 1989).

PREVALENCE

Generally, worldwide it is estimated that one in seven couples have problems conceiving, with the incidence similar in most countries independent of the level of the country's development. Fertility problems affect one in seven couples in the UK. Most couples (about 84 out of every 100) who have regular
sexual intercourse (that is, every 2 to 3 days) and who do not use contraception will get pregnant within a year. About 92 out of 100 couples who are trying to get pregnant do so within 2 years. Women become less fertile as they get older. For women aged 35, about 94 out of every 100 who have regular unprotected sexual intercourse will get pregnant after 3 years of trying. For women aged 38, however, only 77 out of every 100 will do so. The effect of age upon men’s fertility is less clear.

In people going forward for IVF in the UK, roughly half of fertility problems with a diagnosed cause are due to problems with the man, and about half due to problems with the woman. However, about one in five cases of infertility have no clear diagnosed cause. In Britain, male factor infertility accounts for 25% of infertile couples, while 25% remain unexplained. 50% are female causes with 25% being due to anovulation and 25% tubal problems/other. In Sweden, approximately 10% of couples are infertile. In approximately one third of these cases the man is the factor, in one third the woman is the factor and in the remaining third the infertility is a product of factors on both parts.

The 1981 census of India estimate infertility to be in the range of 4-6%. A global review of infertility from the world fertility survey and other estimated similar rates of infertility in other settings in South Asia, such as 4% in Bangladesh, 6% in Nepal, 5% in Pakistan and 4% in Srilanka. (vaessen 1984 and Farley et al., 1988).

**REPRODUCTIVE PROCESS**

In simple terms, reproduction is the process by which organisms create descendants. This miracle is a characteristic that all living things have in common and sets them apart from nonliving things. But even though the
reproductive system is essential to keep a species alive, it is not essential to keep an individual alive.

In human reproduction, two kinds of sex cells or gametes are involved. Sperm, the male gamete, and an egg or ovum, the female gamete must meet in the female reproductive system to create a new individual. For reproduction to occur, both the female and male reproductive systems are essential.

A woman is born with over a million eggs in her ovaries. By the time she reaches puberty, she will have about 300,000 left. Of these eggs; only about 300 will mature and be released during the reproductive years. All of her eggs are stored in her ovaries. The hormones needed for menstruation and to become pregnant are produced by the hypothalamus, pituitary and ovaries.

A woman’s monthly menstrual cycle drives her ability to conceive. The cycle begins on the first day of a woman’s period and typically lasts about 21 days. During the first 13 days of a typical female’s cycle, a hormone called the follicle stimulating hormone (FSH) is released and stimulates the development of a fluid filled sac called a follicle in one of the ovaries. This follicle then produces a single mature egg. While this is happening, the follicle secretes estrogen, which prepares the cervical mucus at the entrance of the uterus to receive sperm. The endometrium (lining of the uterus) also begins to thicken during this follicular phase of menstrual cycle.

A surge in Leutinizing hormone (LH) facilitates the final step of the maturation of the egg and on about the 14th day, triggers ovulation. The egg is released from one of the ovaries and travels down a fallopian tube. The sperm attempts to swim pass the cervical mucus and into the fallopian tube, where it can fertilize the egg. Following ovulation, the hormones progesterone and
Results and Discussion

Assessment of Oocyte Quality with AMH, Inhibin B, in Serum and Follicular Fluid and Predicting Pregnancy outcome with Sperm DNA Fragmentation in Art Cycles

Estrogen develop and maintain the endometrium for receiving a fertilized egg. If the egg is fertilized, the embryo travels down the fallopian tube to implant itself into the endometrium on about 20th day of the cycle. Here it will develop into a fetus. If the egg is not fertilized, it still continues its journey into the uterus, but the uterus does not receive the hormonal message that fertilization has occurred. Without this hormonal message, the uterus ends its preparations for pregnancy, discarding the endometrial lining, as well as the extra blood and nutrients it has build up. This familiar event is known as menstruation.

Each step in the cycle is controlled by hormones that must generally be produced in the correct amounts, at the right time, in order for a woman to conceive. The key hormones that affect this cycle are FSH, LH, progesterone, estrogen, AMH, inhibin.

**IMPORTANCE OF SPERM**

For men, an essential part of fertility involves the creation of normal mature sperm. If the sperm are healthy (normal) they are able to travel through a women’s cervix and uterus and into the fallopian tubes, one of them may fertilise an egg.

**IMPORTANCE OF EGG QUALITY**

Egg quality refers to how ready the eggs are to become fertilized and develop into embryos. The eggs need to have certain characteristics to develop successfully into embryos. These include a) the proper chromosomes,

- The ability to combine sperm
- Energy to split after fertilization
Age plays a key role in determining both the quantity and quality of the eggs. Any interruptions can disrupt a couple’s ability to conceive which results in infertility.

**AIM & OBJECTIVES**

The aim of this study was “Assessment of Oocyte Quality with AMH, Inhibin B in Serum and Follicular Fluid and Predicting Pregnancy outcome with Sperm DNA Fragmentation in Art Cycles”.

- To compare Day 2 FSH, LH, PRL, E2, PROGESTERONE in control and infertile couples.
- To compare the FSH, LH, E2, PROG, AMH, INHIBIN B of serum in both groups.
- To compare the FSH, LH, E2, PROG, AMH, INHIBIN B of follicular fluid in both groups.
- To compare the oocyte quantity and quality with serum AMH and INHIBIN B in both groups
- To compare the oocyte quantity and quality with follicular fluid AMH and INHIBIN B in both groups
- To assess the sperm DNA fragmentation in raw and prepared semen samples in control and infertile men.
- To compare the DFI with control and infertile men.
- To compare the sperm DNA fragmentation index with the fertilization rate of control and infertile couples.
- To compare the sperm DNA fragmentation index with the cleavage rate of control and infertile couples.