



EVALUATION OF OVARIAN RESERVE IN FEMALE INFERTILITY

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ABSTRACT

INTRODUCTION: Infertility is not uncommon amongst females in reproductive age group. Different hormones like antimullerian hormone (AmH) and FSH levels are expression of ovarian function. The changes in AmH level precedes FSH level variation in detecting decline in ovarian function.

METHOD: In our study, we have assessed AmH level in different age groups of females suffering from infertility to evaluate ovarian reserve in them.

RESULT: Our study shows that with advancing age ovarian function declines as evidenced by decrease in AmH level causing female infertility.

CONCLUSION: AmH level estimation is an important tool to assess ovarian reserve in female infertility. It is a simple, less expensive and reliable test before further investigations to find out other etiologies of infertility.

KEYWORDS: Infertility, ovarian reserve, Antimullerian hormone (AmH), FSH

INTRODUCTION

Infertility is common and affects 10-15 percent of reproductive age group. Well publicized success in infertility treatment now gives patients greater hope that medical intervention will help them achieve their goal. Fecundability is highly age related with a significant decrease beginning at approximately 32 years of age and more rapid decline after age 37 (1).

Successful pregnancy in a female requires a complex sequence that includes ovulation, ovum pick-up by fallopian tube, fertilization, transport of fertilized ovum into the uterus, and implantation into a receptive uterine cavity.

Antimullerian Hormone (AmH) is the most recent circulating factor to be analyzed as an ovarian reserve predictor (2). As suggested by its name, antimullerian hormone (AmH) is expressed by the fetal testes during male differentiation to prevent development of the mullerian system. AmH is also expressed by the granulosa cells of small preantral follicles, with limited expression in larger follicles. This suggests that AmH plays a role in dominant follicle recruitment (3).

Because AmH is thought to vary minimally across the cycle, measurement of AmH levels provides an advantage compared with FSH testing. However, new studies demonstrate larger fluctuations than originally reported (4). In addition, recent or ongoing use of hormonal contraceptives may affect serum AmH levels (5).

At this point, it is reasonable to obtain an AmH level during the follicular phase coincident with measurement of FSH level. Recent studies suggest that AmH levels correlate with ovarian primordial follicle number more strongly than do levels of FSH, or inhibin (6).

Furthermore, AmH levels may drop prior to observable changes in FSH or estradiol levels, providing an earlier marker of waning ovarian function.

Seifer and colleagues (2011) reported a steady decline in serum AmH levels across the reproductive life span (7). The median level approximated 3 ng/mL at age 25, and this dropped to 1 ng/mL at age 35-37 years. Interestingly, AmH levels are increased two to three fold in women with PCOS compared with normal cycling women (8). This observation is consistent with the multiple early follicles found in these patients.

Estimation of serum AmH is used in the study of ovarian reserve in an infertile woman and a woman with secondary amenorrhoea. In IVF, it carries a prognostic value and helps to decide on donor egg.

AIMS AND OBJECTIVES

Aims and objectives are to assess the level of AmH in different age groups to predict ovarian reserve in case of female infertility.

MATERIALS AND METHODS

A prospective study was done from 9th September 2020 to 8th June 2021, in Narayan Medical College and Hospital, Jamuhar, Sasaram. Total number of patients selected for study was 205 between the age group of 20 to 40 years and had complaints of irregular menstruation or infertility or both.

The method adopted to measure AmH level is ELFA (Enzyme Linked Fluorescent Assay). The normal range of AmH in this method is 2.0 to 6.8 ng/mL.

OBSERVATION

Table showing levels of AmH with percentage in different age group of patients:

Age of Patients						Total No. of Patients
20 to 30 yrs (No. 107)			31 to 40 yrs (No. 98)			
Normal	High	Low	Normal	High	Low	205
66	18	23	24	4	70	
61.68%	16.82%	21.50%	24.49%	4.08%	71.43%	

DISCUSSION

In our study in lower age group (20-30 yrs) AmH level is low in 16.82%, normal in 61.68% and high in 21.49% of cases. In contrast to above figures, in higher age group (31-40 yrs) AmH level is high only in 4.08% of cases, normal in 24.48% of cases and low in 71.42% of cases showing decline in ovarian function with increasing age which is similar to the study done by American Society for Reproductive Medicine 2014 (1) and Seifer and colleagues (7).

SUMMARY

Serum level of AmH is single, non-invasive and cost effective test which can be done any time in the menstrual cycle, preferably in the follicular phase to assess ovarian reserve in infertile female before proceeding to further investigations to rule out other causes of infertility.

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