Original Article

Role of Anti-mullerian Hormone (AMH), As A Prediction of Clinical Pregnancy Outcome in Women with Polycystic Ovarian Syndrome with Sub Fertility

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Abstract

Background: *Anti-mullerian hormone (AMH) in largely expressed throughout folliculogenisis (by granulosa cells in ovarian follicles) but highest in pre-antral and small antral steges (<4mm) drameter of development.*

Objective: *To analyse the usefulness of plasma anti-mullerian hormone (AMH) measurement as a test for assessing ovarian reserve in Polycystic ovary syndrome with sub fertility,*

Methodology: *Women with PCOS and sub fertility, were included in this study with age group 18-35yrs. This Prospetive cohort study done in 30 cases in ShSMC with purposive randomized sampling, from January 2015 to December 2015. Serum, plasma & for evaluation of PCOS, preferably TV-USG was done.*

Result: *In this study we analyze 30 serum samples from patient aged between 18-35 years and transvaginal ultrasonography was done simultaneously. Mean age group of my patient was 25.2±4.7 years which correlates with AMH level in PCOS which is statistically significant (p<0.001). Mean level of AMH is 5.7±4.9 mg/ml which is also correlate with transvaginal USG scan with the feature of PCOS (p<.0.001). More than 50% woman presents with features of subfertility with PCOS and 46.7% are normal ovaries. Mean menstrual day 7.6 (4-12 days) which have a good linear correlation with irregularities of menstrual cycle and PCOS (p<0.05).*

Conclusion: *To conclude AMH appears to have a major inhibiting role during folliculogenesis, which may contribute to anovulation in PCOS. The reason for the raised AMH in PCOS may give clues as to the mechanism os anovulation.*

Key Words:
Infertility, PCOS, anti-mullerian hormone, (Obs & Gynae); OPD

Introduction

Anti-mullerian hormone (AMH) in largely expressed throughout folliculogenesis (by granulosa cells in ovarian follicles) but highest in pre-antral and small antral steges (<4mm) diameter of development. Serum AMH level may represent the quality and quantity of ovarian follicular pool.[1] AMH-production decreases and then stops as follicles grow. There is almost no AMH made in follicles over-8mm.[2] AMH-blood level are thought to reflect the size of the remaining egg supply or "ovarian reserve" and can be measured any times of menstrual cycle.[3] AMH is a focus of interest in polycystic ovary syndrome (PCOS), there appear two groups of women with PCOS who can be distinguished by their AMH level.[4] AMH is directly related to the number of Oocyte that are suitable at IVF, its value is in identificat ion of women likely to over responds and thus be at risk of ovarian hyperstimultion syndrome and conversely, women where a poor response in predicted, to help manage expectations.[5] AMH-is bear discriminator than FSH. AMH is frequently to as reflecting the ovarian response meaning the number of Follicles that can be sensitized to grown by the administration of FSH.[6] The term "Overran reserve" is also used, perhaps more accurately, to mean the post of primodial non-growing

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follicles within the ovary thus AMH-can be correctly surge to reflect the ovarian reserve.[7] As AMH is produced by small follicles whose numbers reflect the primordial pool, concentrations decline with age in adult women.[8] The production of AMH by small antral follicles clearly indicates that AMH production is likely to be FSH-regulated, as these follicles are regulated by FSH.[9]

Methodology

This prospective cohort study was conducted at the infertility clinic in Shaheed Suhrawardy Medical College Hospital, Dhaka, Bangladesh. Thirty cases were taken by purposive randomized sampling technique. Women with PCOS and primary subfertility were included in this study with age 18-35 yrs and transvaginal ultrasonography was done simultaneously. Blood sample was taken for measurement of AMH level in serum. Patient with significant hyperprolactinemia, abnormal thyroid function tests, and congenital adrenal hyperplasia were excluded from this study. The data analysis was done by SPSS (version 17.0) program. The results are shown in graphs & tables.

Results

In this study we analyze 30 serum samples from patient aged between 18-35 years and transvaginal ultrasonography was done simultaneously. Mean age group of patient was 25.2±4.7 years which correlates with AMH level in PCOS, which is statistically significant (p<0.001). Mean level of AMH is 5.7±4.9 mg/ml which is also correlate with transvaginal USG scan with the feature of PCOS (p<.0.001). More than 50% woman presents with features of subfertility with PCOS and 46.7% are normal ovaries. Mean menstrual day 7.6 (4-12 days) which have a good linear correlation with irregularities of menstrual cycle and PCOS (p<0.05). Mean of marriage 6.6±3.3 years (range 1.5-15 years). So, serum AMH assessment could predict the good or poor ovarian reserve for management of PCOS women with sub fertility and in vitro fertilization.

Table-1

Age distribution among the patients with PCOS

Age	Frequency	Percent	Mean±SD	P-value
18-25 years	19	63.3	25.2±4.7	P<0.001
26-35 years	11	36.7		
Total	30	100.0		

Table-II

Association with menstrual history and provisional diagnosis

Association with menstrual history and provisional diagnosis	Regular means	Irregular means	P value
Primary infertility	11	7	0.09
Secondary infertility	4	1	
Primary infertility with PCOS	1	5	
Secondary infertility with PCOS	0	1	
Total	16	14	

Table-III

Association with USG and AMH

Association with USG and AMH	Mean	Standard Deviation	P value
AMH	5.68	4.90	0.001
USG	1.57	0.57	

Table-IV

Association with menstrual history and AMH

Association with menstrual history and AMH	Mean (day)	Standard Deviation	P value
Menstrual history	7.60	3.33	0.005
AMH	5.68	4.90	
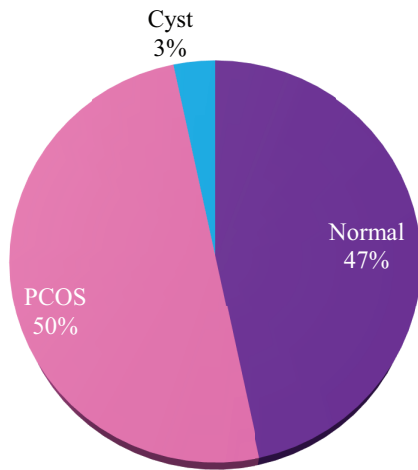
Figure-1: *Transvaginal USG scan result of the ovarian volume*

- Lowest level
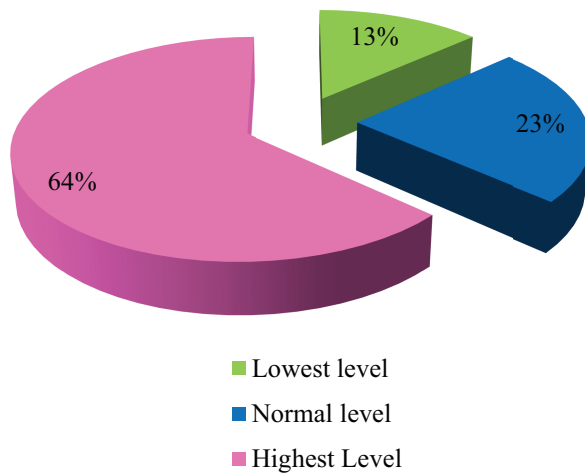- Normal level
- Highest Level

Figure-2: *AMH level in serum*

Discussion

Many studies published in recent years have demonstrated that the concentration of AMH is 3-4 times higher in patients affected by PCOS than in patients age and other hormonal test, such as FSH, because it is influence by menstrual cycle. Identification of PCOS by means of invasive test such as transvaginal ultrasonography for follicular count and residual ovarian capacity. In my study: We also compare our values with reported in literature, comparing the value that are obtained with those other literature, it can be seen that the average values of controls (1.5-3mg/dl) are lower than those in patient with PCOS, confirming the validity of the test (3-19.5mg/dl) as an indicator of the syndrome (PCOS). Other hormonal evoluation also done like LH, S.TSH, S.T$_3$.

Conclusion

AMH gives an evaluation tools in either reduced and elevated levels in PCOS women. AMH is considered as a useful test to study folliculo genesis and ovarian potential in various situations of fertility and for identification of PCOS. To avoid the possibility of subjecting patients at risk of ineffective assisted reproductive technology and using hormonal stimulation or in vitro embryo transfer needs careful clinical assessment.

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