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Case Report

From low anti-mullerian hormone to hope: holistic management in primary infertility - a case report

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ABSTRACT

Anti-Mullerian Hormone (AMH) is produced by the ovaries that help assess a woman's ovarian reserve. Between the ages of 20 and 25, AMH levels peak and then progressively drop with advancement in age and are no longer detectable in the menopausal and postmenopausal phases. A low AMH level suggests that a woman may have diminished ovarian reserve/ premature ovarian failure. While evaluating infertility, AMH helps clinicians make the best choices for managing women who are trying to conceive. There are various factors such as stress, diet, lifestyle which contributes to hormonal imbalances. This case report explains about Primary Infertility of an adult woman with low AMH level. The main objective is to demonstrate how the integrative approach of Yoga, Naturopathy and Acupuncture treatments can help with increasing AMH level. After one month of intervention, the AMH level has been significantly improved from 0.89 ng/ml to 1.36 ng/ml. No adverse effects were observed during and after the treatment. She conceived naturally after two months of follow-up. Thus Yoga, Naturopathy and Acupuncture treatments have been shown to improve the ovarian reserve without causing any adverse effects.

Keywords: Acupuncture, Anti-mullerian hormone, Naturopathy, Primary infertility, Yoga

INTRODUCTION

Infertility means an individual's inability to get pregnant after one year of regular unprotected-sexual activity.¹ Identifiable causes are seen in approximately 85% of the infertile couples.² Globally, 8-12% of couples affected by infertility are of reproductive age. Among them, 33-41% are due to female factors. Ovulation disorders such as polycystic ovarian syndrome, hypothalamic dysfunction, premature ovarian insufficiency, tubal infertility, endometriosis, or uterine and cervical causes are the most common aetiologies of female infertility.³ In women, Granulosa cells of the ovary secrete Anti-Mullerian Hormone (AMH). While evaluating ovarian reserve, AMH appears to be relatively a stable marker and considered as

one of the major diagnostic tools in the assessment of infertility.^{4,5} Yoga, the holistic approach, positively modulates the hypothalamo-pituitary-adrenal axis (HPA) and reduces stress. It also reduces the inflammatory mediators and enhances the blood flow to the reproductive organs. In this way, Yoga regulates the key factors responsible for infertility.⁶ The fundamental principle of naturopathy is that the body heals itself. Naturopathic treatments remove toxins from the body, promote rejuvenation and enhance the person's general vitality. For infertility, these treatments improve the blood circulation to the reproductive organs and aid in the proper functioning.⁷ Acupuncture in turn regulates the Hypothalamo Pituitary Ovarian (HPO) axis and increase the peripheral uterine stimulation. It also helps in

regulating the key factors responsible for infertility.⁸ The literature search reveals that only few papers were reported about AMH and primary infertility. The main objective of this case report is to explore the integrated regimen of yoga, naturopathy and acupuncture in improving the egg quality and reproductive health of the women.

CASE REPORT

A 27-year-old married female visited the Outpatient department (OPD) at International Institute of Yoga and Naturopathy Medical Sciences, Chengalpattu, Government of Tamil Nadu who had been trying to conceive naturally for the past 1 year. She attained menarche at the age of 14 with 40-days regular cycle of 3-days flow and dysmenorrhea on the first day of menstruation. No indications of leucorrhoea and the menstrual clots. She has struggled to fall asleep for the last eight months.

Clinical findings

Her anthropometric measurements are as follows: height (158 cm), weight (65 kg), and BMI (26.1 kg/m²). Before one year, she consulted a Gynaecologist where the doctor

recommended an Ultra-sonogram (USG) of Abdomen and Pelvis and Hormonal assay (Follicle Stimulating hormone (FSH), Luteinizing Hormone (LH), Prolactin and AMH levels). The USG showed no abnormalities, whereas the blood report shows a low AMH level of 0.89 ng/ml. Since there is a lack of awareness regarding the impact of AMH on infertility, she hasn't undergone any treatments related to that.

Diagnostic assessment

The Patient underwent USG abdomen and pelvis along with blood tests that includes FSH, LH, AMH and prolactin levels.

Intervention

For a month, the patient received yoga, naturopathy and acupuncture interventions at OPD. The subject underwent 60 minutes of yoga routine listed below. In addition to that, naturopathic interventions such as Pelvic massage, hydrotherapy, mud therapy, diet therapy and acupuncture were provided. Table 1 and 2 provides a thorough explanation of the interventions given.

Table 1: A detailed description of the intervention given to the subject.

Intervention	Duration (in min / session)	Frequency (in 90 days)	
Yoga	Asanas		
	Suryanamaskar (slow)	10	270
	Shakthibandasana series	10	52
	Malasana	1	60
	Vajrasana	1	55
	Marjariasana	2	70
	Mandukasana	2	75
	Balasana	2	75
	Uttanpadasana	2	50
	Padachakrasana	3	55
	Setubandasana	2	85
	Pranayama		
	Nadi shuddhi pranayama	2	78
	Bhramari	2	78
	Sheetkari along with yoni mudra	2	78
Relaxation technique			
Yoga nidra	20	36	
Naturopathy	Cold hip bath with circular friction over lower abdomen	15	56
	Pelvic massage	10	8
	Mud pack to abdomen and eyes	15	15
Acupuncture	Conception vessel (CV) meridian massage	15	15
	Foot reflexology	10	30

Table 2: Diet chart.

Timing	Food items	Servings /day
6 to 6.30 a.m.	A teaspoon (5 gm) of melted ghee/ pumpkin and flaxseed powder mixed in warm water (200 ml).	1
7.30 a.m.	A glass of lemon honey juice/ ash gourd juice/ fenugreek water (150 ml)	1
9 to 9.30 a.m.	Ragi dosa (2) with mixed vegetable curry (200 gms)/ vegetable kichadi (400 gms) / millet idly (3) with sambhar (250 gms) / idiyappam (2) with coconut milk (250 ml).	1
11 to 11.30 a.m.	Nuts and seeds (almonds, dates, walnuts, cucumber seeds)/ any seasonal fruits available.	1
1.30 to 2.30 p.m.	150 grams of rice (preferably red rice) + 100 grams horsegram curry/ dal + 150 grams vegetable sabji/ greens+ 100 ml buttermilk	1
4.30 to 5 p.m.	Vegetable soups (drumstick/ mushroom) (250 ml) or boiled sweet potatoes (300 gms) or coriander seed tea/ dry guava leaf tea (150 ml).	1
7.30 to 8 p.m.	Steamed foods (idly (2)/idiyappam (2)) / chapati with boiled vegetables (bottle gourd, carrot, capsicum, corn) (400gms)	1

Follow-up and outcomes

After 30 days of intervention, there is a significant increase in the AMH level, and the prolactin level returns to normal, whereas there is no significant change in the FSH and LH levels as mentioned in Table 3.

Table 3: Hormonal levels before and after one month of intervention.

Clinical parameter	Pre	Post
AMH	0.89 ng/ml	1.36 ng/ml
FSH	7.89 miu/ml	8.48 miu/ml
LH	9.77 miu/ml	4.02 miu/ml
Prolactin	21.86 ng/ml	8.92 ng/ml

The patient was advised to follow the mentioned yogic practices, cold hip bath and diet protocol for the consecutive 2 months. She was conceived in the month of October 2023.

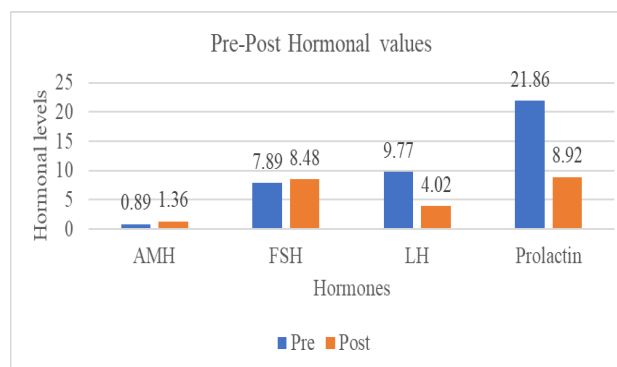


Figure 1: Pre and post hormonal values (AMH- anti-mullerian hormone in ng/ml; FSH -follicle stimulating hormone in miu/ml; LH- luteinizing hormone in miu/ml; prolactin in ng/ml).

DISCUSSION

Physiologically, the number of eggs gets depleted due to declining age. In this modern era, due to changes in diet, lifestyle, stress, tension, and poor sleep routine, the egg quantity and quality get affected despite advancement in age. The poor ovarian reserve is one of the major factors the lead to infertility.⁹ Yoga has a well-established effect in maintaining hormonal balance. Endocrine dysfunction is often treated with yoga techniques such as asanas, pranayama, and meditation.¹⁰ The compression and release during the practise of asanas, alters the hypothalamic and pituitary functions and endocrine disorders may benefit from the massage of different organs and enhanced venous return. It also improves oxygenation of endocrine glands.¹¹ The practise of pranayama prevents the hypoxic state of ovum by increasing the peri-follicular vascularity and phasic oxygen supply to ovum. Thus, it improves the ovarian reserve.¹²

Naturopathy, a lifestyle medicine, considers stress, lifestyle and diet as the contributing factors for hormonal imbalances. The various naturopathic therapies address the hormonal imbalance by modulating these parameters.¹³ The hydrotherapy modalities help in increasing the blood circulation, plasma level of beta-endorphins and influence the sympathetic activity in the body.¹⁴ The application of mud therapy exhibits anti-inflammatory effects by reducing prostaglandin E2 levels, thus improving micro-circulation to the ovarian cortex and it may help to maintain the ovarian reserve.¹⁵ Foods high in omega-3 fatty acids, Folic acid, vitamins C and D, selenium, zinc, and iron have been reported to promote ovarian steroidogenesis, regulate the hypothalomo-pituitary-ovarian axis, and preserve an individual's reproductive health.¹⁶ According to Traditional Chinese Medicine (TCM), Liver, Spleen and Kidney work together to regulate the hormones. Deficiency of Qi in these meridians may lead to hormonal issues.¹⁷ Conceptional vessel (CV) is the directing vessel, which is known as the 'sea of the yin channels' that governs the kidney, liver and spleen meridian. Massage to the conceptional vessel meridian

promotes the supply of blood to the uterus and prevents the stagnation of Qi in the corresponding channels.¹⁸ Yoga, naturopathy and acupuncture work together to regulate the key factors of infertility including stress, anxiety, poor lifestyle, inflammation, and oxidative stress. By addressing these factors, it encourages the renewal of the whole body and prepares the body to be ready for conception.

CONCLUSION

The AMH level is increased following the three months of intervention. This case report highlights the integrated approach of yoga, naturopathy and acupuncture interventions in improving the ovarian reserve and fertility outcomes. The observed increase in AMH level accompanied by successful conception, suggesting a positive influence of yoga and naturopathy regimen on reproductive health. Since this conclusion is based on a single case study, randomized control studies are required to validate the results.

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Ethical approval: Not required

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