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A STUDY ON THE EFFECT OF VANARI VATIKA YOGAM IN ASTHENOZOOSPERMIA

Vipin S G[1], I Ashrafudeen[2]

[1]Associate Professor, Dept of Kayachikitsa, Sree Narayana Institute of Ayurvedic Studies & Research, Kollam, Kerala
[2] Professor, Dept of Kayachikitsa, Govt Ayurveda College, Thiruvananthapuram, Kerala, India

Email: sgvipin@yahoo.co.in

ABSTRACT

Male infertility can be defined as an inability to induce conception due to defect in spermatic functions. The male partner carrying pathological semen reports include Low sperm count, Motility, Abnormal forms and sperm functional tests and whose female partners have been ruled out for the possible etiological factors of infertility may be diagnosed under male infertility. Recent statistical data shows nearly one among the six couples in the world are suffering from infertility. Incidence of male infertility varies from 30-40%. Among these, 30% of the male infertility is due to the factors like Oligospermia, Asthenozoospermia, Azoospermia etc. Reduced motility (Asthenozoospermia) has been more often associated with infertility than reduced sperm concentration or increased percentage of abnormally configured sperm cells. Asthenozoospermia can be associated with or without oligospermia but more commonly associated with reduced sperm concentration. Temperature may also exert its influence on sperm motility have observed a significant difference in sperm motility of Asthenozoospermic, Oligozoospermic and Normozoospermic males when analysis was performed during winter or summer (lower in winter, higher in summer). Keeping this in mind the study aims to assess the effect of an ayurvedic compound in reduced sperm motility & other seminal parameters.

Keywords: Asthenozoospermia, Male infertility.

INTRODUCTION

Ayurveda, the holistic medicine describes potent drugs and efficient therapeutic procedures to face the problem of infertility. *Vajeekarana*, the eighth branch of Ayurveda mainly deals with the drugs and therapeutics which are aphrodisiacs in nature. It provides progeny to infertile couple, potency to the impotent, at the same time excellence of progeny with suitable therapeutic measures. Ayurveda explains *Vajeekarana* Chikitsa in a very scientific manner. *Vajeekarana* is indicated in diseased persons for curative purpose and in healthy persons for replenishing body, maintaining *swasthya* and promoting positive sexual health. The study aims to assess the effect of an ayurvedic compound in reduced sperm motility & other seminal parameters. (Ch.Chi vajeekarana prakarana)

Objectives

1. To evaluate the effect of an Ayurvedic compound in Asthenozoospermia.
2. To evaluate its effect in other seminal parameters.

Materials & Methodology

Evaluation of a compound medicine is not complete until its efficacy is tested at specific clinical conditions. The present formulation is selected from the text Bhaishajya Ratnavali, which is used extensively by ayurvedic practitioners especially in Kerala.

Preparation of The Compound

The yogam *Vanari vatika* is a well-known *Vajeekarana yogam* said in Bhaishajya Ratnavali, Bhavaprakasha & Yogaratnakaram

Drugs Used

Good quality, small variety of *Vanari beeja* were purchased from the market

Good quality cow's milk was taken

Good quality cow's ghee was taken

Sugar candy

Honey

Method of Preparation

Good quality, small *Vanari beeja* were cleaned, soaked in water to remove husk. The outcome drug was later heated in four times the quantity of milk for three times. This was then dried & powdered.

Sugar candy, powdered well, which is twice the amount to that of choorna is taken, heated in a wide mouth container. Enough quantity of water is added, boiled it till it becomes syrupy form. When the mixture reached proper paka (thanthumatwam), the above powder is added to it, stirred properly in order to attain a uniform granular form. Suitable quantity of ghee should also be added during this procedure. Now the preparation is ready and can be used for administration along with honey in suitable dose.

Despite the formulation mentioned in Bhaishajyaratnavali is in Vatika form, we have ameliorated the yoga to granular form in order to enhance its shelf life and to administer it in a scientific dosage form. Formulation was processed under the strict supervision from the Dept. of Pharmacy, Govt. Ayurveda College, Thiruvananthapuram.

Preparation of *Vanari Vatika Yogam*

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Dose and Mode of Administration

In the classics, the preparation was told as *Vatika form*, but due to the practical difficulty & to increase the shelf life it was modified into choorna form and the dose is fixed at *one karsha* (12 gm) twice daily along with 5 gm of honey for a period of 90 days.

Research Design: The study was done as a simple clinical trial with pre-test and post-test design. Before starting the study, patients were examined in detail both subjectively and objectively. Those who satisfied all the selected criteria were selected in trial group. The trial group was given *Vanari Vatika yogam*, 12 gm choornam with 5 gm of honey twice daily half an hour before breakfast and dinner with enough quantity of honey. Prior to this, as a part of pre-operatory sodhana therapy (purificatory therapy), study group was subjected to *Deepana-pachana* with *Panchakola choorna*, *Snehapana* with *Kalyanaka ghritham*, *Usnambu snanam* as *Swedanam*, *Virechana* with *Avipathi choornam*.

Setting of The Study: The Vajeekarana OPD of Department of Kayachikitsa, Govt. Ayurveda College, Thiruvananthapuram was selected as the setting of the study.

Population: The patients with Oligoasthenozoospermia satisfying the inclusion and exclusion criteria, attending the Vajeekarana OPD, during the study period.

Sample: In the present study 20 patients were screened. Out of these 17 patients complied with selection criteria were selected.

Inclusion Criteria: Patients with sperm motility less than 50 % (rapid progressive motility+slow progressive motility) or less than 25% rapid progressive motility alone associated with or without oligospermia on at least two semen analysis. Age group between 25 to 55 years.

Exclusion Criteria

Systemic diseases
Developmental anomalies of genitourinary system
Endocrine disorders
Venereal disorders
Obstructive causes
Unwilling patients

Data Collection

The patients were thoroughly examined both subjectively and objectively as per clinical proforma designed. Routine blood and urine analysis were conducted to exclude other systemic affections. Previous investigation and treatment history were also collected. Repeated semen analysis was conducted before reaching the diagnosis each with three days of abstinence.

Treatment Schedule: In the trial group *Deepana-Pachana* was performed with *Panchakola choorna* 5gm bd before food upto getting proper result. After this *Acchasnehapana* was done with *Kalyanaka ghritham* for the maximum period of administration being seven days and dose adjusted depending on individual's koshta. *Ushnambusnana* was done as *Swedhana* for three consecutive days immediately after *Snehapana*, after applying Thaila. Next day succeeding *Swedana*, patients were administered with *Avipathi choorna*, the dose adjusted as per the individual's koshta between 20 to 40 g. After *Samsarjanakriya*, *Vanari Vatika yoga*, the compound formulation selected for study was administered for three months (24 g daily in equally divided doses i.e. 12g, half an hour after breakfast and dinner with 5gm of honey) to cover the length of a spermatogenic cycle.

Assessment: Repeated semen analysis was done before starting *deepana-pachana*. The assessment was made by performing semen analysis after Sodhana and after completing three months course of trial drug.

Method of Statistical Analysis

Data collected were arranged in a master sheet and statistical tables were constructed. In order to compare the data obtained for the single group in different stages of the treatment and to draw conclusions, statistical constants like arithmetic mean, standard deviation, percentage and 't' values were computed. Post treatment changes were assessed by paired 't' test and differences between the groups were assessed by unpaired 't' test.

Observations

Table 1: Distribution Based on Rapid Progressive Motility

RPM	N	mean	sd	Paired comparison	Paired Differences		t	p
					Mean	Std. Deviation		
BT	17	10.1	9.9	BT-AS	5.3	7.6629	2.849	.012
AS	17	15.4	12.7	AS-AT	10.7647	6.3985	6.937	.000
AT	17	26.2	15.7	BT-AT	16.0588	11.1326	5.948	.000

Before treatment rapid progressive motility was 10.1±9.9 %, after *sodhana* it was increased to 15.4±12.7% and then it was increased to 26.2±15.7% after trial drug administration. As $p<0.05$ it is statistically significant. After trial drug administration rapid progressive motility increased to 26.2±15.7, and data is statistically highly significant ($p<.001$). So, the trial drug is effective in increasing & maintaining rapid progressive motility.

Table 2: Distribution Based on Slow Progressive Motility

SPM	N	mean	sd	Paired comparison	Paired Differences		t	p
					Mean	Std. Deviation		
BT	17	12.5	8.8	BT-AS	-4.71	7.12	-2.724	.015
AS	17	17.2	8.3	AS-AT	-.59	5.17	-.469	.645
AT	17	17.8	6.9	BT-AT	-5.29	6.08	-3.590	.002

Before treatment slow progressive motility was 12.5±8.8 %, after sodhana it was increased to 17.2±8.3% and then it was increased to 17.8±6.9% after trial drug administration. So, it is statistically significant after shodhana and trial drug administration

Table 3: Distribution Based on Total Motility (Active Motility)

ACTIVE MOTILITY	N	mean	sd	**Paired comparison**	Paired Differences		**t**	**p**
					Mean	Std. Deviation		
BT	17	22.6	13.9	BT-AS	8.82	10.09	3.604	.002
AT	17	31.5	15.5	AS-AT	12.35	9.54	5.339	.000
AS	17	43.8	14.7	BT-AT	21.18	12.58	6.943	.000

Before treatment active motility was 22.6±13.9%, after sodhana it was increased to 31.5±15.5% and then it was increased to 43.8±14.7% after trial drug administration. So, trial drug is effective in increasing active motility

Table 4: Distribution Based on Non-Progressive Motility

NPM	N	mean	sd	**Paired comparison**	Paired Differences		**t**	**p**
					Mean	Std. Deviation		
BT	17	12.1	4.7	BT-AS	-.06	4.56	-.053	.958
AS	17	12.1	6.0	AS-AT	1.82	3.49	2.157	.047
AT	17	10.3	5.8	BT-AT	1.76	5.21	1.395	.182

After comparing non progressive motility before and after treatment, 't' value was found to be 1.395 and 'p' value 0.182, which is greater than 0.05, so it is statistically not significant but the overall treatment is effective in decreasing non progressive motility but not statistically significant.

Table 5: Distribution Based on Immotile Sperms

Immotile	N	mean	sd	Paired comparison	Paired Differences		**t**	**p**
					Mean	Std. Deviation		
BT	17	65.3	13.7	BT-AS	10.06	9.82	4.223	.001
AT	17	55.2	14.6	AS-AT	9.65	8.94	4.451	.000
AS	17	45.6	14.7	BT-AT	19.71	13.29	6.114	.000

Before treatment Non motile sperms were 65.3±13.7 %, after *sodhana* it was reduced to 55.2±14.60% and then it was reduced to 45.6±14.7% after trial drug administration. After *sodhana*, non-motile sperms were found to be reduced, on statistical analysis 't' value is 4.223 and 'p' value found to be 0.001. As p=0.001 it is statistically significant. After trial drug administration non motility reduced to 45.6±14.7 %. So, the trial drug is effective in reducing non motile sperms. Other seminar parameters such as liquefaction time, sperm morphology, sperm concentration is also found to be statistically significant.

DISCUSSION

Discussion Related to Observations on Seminal Parameters.

It is observed that, there is mild increase in semen volume after *Sodhana* process, but the increase is not significant. After trial drug administration also, there is increase in semen volume, but the change is not significant, but the overall treatment is effective in increasing semen volume. This may be due to *Vrishya* and *Brimhana* property of trial drug.

The observations show that trial drug is very effective in increasing the sperm concentration. It may be due to the *Vrishya and Brimhana* quality of the drug. The observations points towards the importance of *sodhana* process prior to *Vajeekarana therapy* because after *sodhana* also there is very significant improvement

Assessing the rapid progressive motility (RPM) there is significant improvement in RPM after *sodhana* and marked improvement after trial drug administration. So, the trial drug certainly improves RPM and maintains good level of motility. While assessing slow progressive motility (SPM) there is significant improvement in SPM after *sodhana* but after trial drug administration there is improvement in motility but not statistically significant. So, it suggests that the trial drug has a limited role in improving SPM. This result

shows that there is not much statistically significant improvement in percentage of SPM category of sperms. But this only shows that majority of nonmotile sperms that present in before treatment semen sample is changed into active motile category after the treatment schedule, which is more desirable for fertility. Overall combined treatment has a great influence in increasing motility. '*Sukra pradipatahana'* and '*Sukra nishkramana'* are due to the karma of normal *Vyana vayu* and *Apana vayu.* Sperm motility is mainly attributed to normal functioning of these factors. Proper sodhana followed by administration of *Brimhana* and *Vatasamana* trial drug rectifies any derangement in their functioning and causes increase in motility. Active motility (RPM+SPM) is also improved after sodhana and improved and maintained after trial drug intake. Due to the vitiated *Apana Vata* the motility of the sperms decreases, it might be rectified by the *Vata Shamana* property and *Brimhana property* of the trial drug. The observations show the importance of purificatory measures for the better action of Vrishya drug. Assessing the non-progressive motility (NPM), data suggest that NPM has no change after shodhana but after trial drug administration there is some change noted and is statistically significant .Considering immotile sperms in the sample, sodhana & trial drug has a big role in reducing the immotile sperm and the two therapies are statistically highly significant. Here the *jeevaneeya* and *brimhana* quality of drug increased the vitality of sperms and thereby reduced the percentage of non-motile sperms.

Considering the morphology of sperms, the normal forms are increased after shodhana but there is no effect in increasing the normal forms by the trial drug. Overall treatment shows slight improvement in increasing the normal forms. Also there is decrease in the abnormal forms after shodhana but no effect after trial drug administration. This may be due to short period of administration of drugs. Long period of administration may give good results. So, sodhana itself has a great role in increasing normal forms but has limited effect in maintaining it.

The trial drug is also capable of improving the liquefaction time in the subjects after sodhana and after trial drug administration.

General health promotion was also achieved by administration of trial drug.

No drug reaction was reported

After the treatment of 90 days, even though the parameters are improved, none of the patients showed the presence of conception in their partner after the treatment. It may be due to the differences in various factors related with the partner or due to patients *prakruti, Dushya, Desha, Kaala, Bala (Roga and Rogi Bala), Anala, Vaya,* duration and *Nidana Sevana* etc.

Discussion Related with the Action of the Drug

In the present study, the trial drug *Vanari Vatika* consists of one herbal drug, *Kapikacchu*. The drug is *Vrishya, Balya* and is a powerful *Vajeekarana dravya*. It has a prominent action on the *Sukravaha srothas*. Kapikacchu and other ingredients in the yoga are having madhura rasa and predominantly madhura vipaka. The drug is having ushna veerya and guru snighda guna. Since the drug is having ushna veerya it will optimize sperm motility. The drug shows guna samanyata to sukra and is an ideal drug for sukrakari chikitsa. During the preparation of the yoga, it is prepared in Goksheera, which is madhura, mridu, snigdha, guru and manda, it provides a synergistic effect for drug action. Here the Anupana is *Madhu*, which is tridoshagna, sookshma and yogavahi. It provides a medium for easy and rapid penetration of the drug to minute channels. The materials like milk, ghee and candid sugar used in the processing also contributes to the sukravardhaka action. Godugdha and goghritha is having Madhura rasa, seethe veerya, snigdha guna and madhura vipaka. Both are "*Ajanma sathmya*", these possess all the properties that increase sukra. Ushna guna of Kapikacchu does not cause decrease in sperm concentration and other seminal parameters because it is compensated by other gunas. The main peculiarity of this combination is that, it has got a multidimensional action on seminal abnormalities like Asthenozoospermia, oligospermia, teratospermia etc. It is due to the well balanced guna veerya combination of ingredients in the trial drug.

The dooshyas which are involved in the production of

Ksheena sukra are mainly Rasa, Majja and Sukra. Madhura Rasa, Sheeta Veerya, Snigdha guna and Madhura Vipaka on the trial drug is going to rectify the vitiated dooshyas especially rasa, majja and sukra leading to normalcy.

Studies reveal that treatment with Mucuna pruriens significantly reduces lipid peroxidation, elevates spermatogenesis and improves sperm motility. Treatment also increases level of total lipids, triglycerides, cholesterol, phospholipids, vitamin A, C and E and increased fructose in seminal plasma of infertile patients. High performance liquid chromatography assay was used to assess Vitamin A, E and, C. Biochemical parameters were assessed by standard spectrophotometric procedures.

CONCLUSION

The condition "Asthenozoospermia" complies with Ksheena sukra-in a qualitative aspect mentioned in major classical textbooks of Ayurveda. The terminology – 'Sukra' in ayurveda can be elucidated in the light of modern science as Neuro vascular endocrine orchestra responsible for reproduction, sexual behaviour etc encompassing Androgens, Semen and Spermatozoa. It is very interesting to note at this context that the observations of this study conform with ancient concepts of Ahara-vihara, Pathy-apathya, Vishopadrava and Sareera-Manasa prakrithi mentioned in Ayurveda. In other words, the patient who follow persistent Apathyahara viharas are found more prone to Ksheena sukra (Asthenozoospermia). The trial drug "Vanari vatika yogam" has been proved as a safe and effective oral formulation, which helps in management of Asthenozoospermia (ksheena sukra), when the condition is not too advanced and when correctly used by patients as per instructions.

This drug showed significant increase in the total or active motility (rapid &slow progressive motility), sperm count. Also influence in liquefaction time and morphology is also seen the drug showed no significant influence on semen volume but overall treatment showed result. The drug was well tolerated by patients and exhibited no adverse or toxic effects in the doses and period administered.

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