

Case Report

ROLE OF MUSTADI YAPANA BASTI ON SERUM BIOMARKERS OF SPERMATOGENESIS: A CASE STUDY

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ABSTRACT

Infertility is clinically defined as the inability of a couple to conceive after 1 year of coital activity without contraception. Due to urbanization and industrialization, there has been a drastic change in our day by day activities including Life style, Food habits, Sexual life. Environmental Pollution, Industrial and occupational hazards are increasing day by day which hampers our reproductive life. Now a day; due to increase stress due to competitive life also hampers our physical and mental health. WHO has estimated incidence of global infertility as 16.7%. The contribution of male factor alone to this total infertility is reported as 26.2% to 46.6%. The male is directly responsible for about 30 to 40 % cases of infertility. In this case study, a male patient of age 25 year with desire to get child and other associated symptoms of weakness and Erectile dysfunction was selected on the basis of semen analysis and other symptoms diagnosed as *Shukra Kshaya* (Oligozoospermia). Oligozoospermia resembles with *Shukra Kshaya* in *Ayurveda* in which sperm count is below 15 mil/ml. The patient was managed with *Mustadi Yapanaa basti* which is described as *balya-vrishya* (gives strength & productive of sexual vigour) in *Sushruta Samhita Chikitsa Sthana* and *shukra-mansa-bala-janana* (give strength, productive of muscle tissue & semen) in *Charaka Samhita Sidhi Sthana*. Results are assessed by serum biomarkers of spermatogenesis and semen analysis. *Basti* treatment gave significantly improvement in all the symptoms of *Shukra Kshaya* and semen parameters as well as on biomarkers in this case.

Keywords: Biomarkers, *Mustadi Yapanaa basti*, *Shukra Kshaya*, *Oligozoospermia*

INTRODUCTION

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.

Oligozoospermia is one of the main causative factor of male infertility. Oligozoospermia resembles with *Shukra Kshaya* in *Ayurveda* in which sperm count is below 20 million/ml. *Shukra Kshaya* is a condition in which there is qualitative and quantitative reduction in *shukradhatu* but in Oligozoospermia there is quantitative reduction of sperms. Decrease sperm count lead to decrease chance of conception and hampers fertility. In present era, due to increase cases of infertility new IVF center and technique are developed day by day. Modern medical science has reached to its peak in the field of infertility. New technology like MART (Medically Assisted Reproductive Technology), artificial insemination, *in vitro*-fertilization, and intra-cytoplasmic sperm injection are started to combat infertility by modern science. These are considered as advanced technologies, but are very costly and not reachable for poor people. So it is Unable to provide service to all class of people in society, also have low success rate.

Ayurveda has described several drugs and special therapeutic procedures to treat the problem of infertility. *Acharya Charaka* also specially mentioned *Basti Karma* for enhancement of *shukradhatu* as well as for *Shukra doṣhas*.

Therefore drugs which are administered in *Basti* form properly enhance the level of *Śukra* definitely. *Acharya Charaka* mentioned *Mustadi Yapanaa basti* for “*Shukra-mansa-bala-janana*” (*Trikamji Yadavji*, 2017) and “*Sadyobalajanaorasayancheti*” in *Sidhi Sthana*. *Acharya sushruta* mention it as *Rajabasti* and

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it is superior to all *Yapanaabasti* and mention its qualities as “*balya-sjivvano-vrishaya*”(Shashtri Ambikadutta, 2008).

CASE

Presenting Concern:

A 25 year male diagnosed with oligozoospermia presented in outpatient department of panchkarma in Ayurvedic and Unani Tibbia college and hospital, with a desire of child .Patient have a married life of 2 year. Since 2 year couple tried to conceive but failed. Complaints of weakness, erectile dysfunction and early ejaculation also presented (Table 01).

Table 01: Timeline of the case

| S.No | Complaints | Duration |
|------|---------------------|----------|
| 01. | Unable to conceive | 2 year |
| 02. | Weakness | 1.5 year |
| 03. | Problem in erection | 1.5 year |
| 04. | Early ejaculation | 1 year |

Past H/o: He had no history of diabetes/bronchial asthma/T.B and hypertension.

Family H/o: No family history of diabetes/hypertension/Bronchial asthma/T.B.

Addiction H/o: He had no addiction history of smoking, tobacco and alcohol.

Semen analysis report (Table 02):

Table 02: Previous semen analysis report

| S.No | Test | Result |
|------|-----------|------------|
| 01. | Color | Whitish |
| 02. | Reaction | Alkaline |
| 03. | Volume | 0.5ml |
| 04. | Count | 12 million |
| 05. | Pus cells | Nil |

Diagnostic criteria:

Diagnosis will be made on the basis of symptoms given in ancient text and modern literature .Laboratory investigation and clinical finding shall be considered for making diagnosis for *Shukra Kshaya*.

As defined by the World Health Organization (WHO) in 1999, a low sperm count is less than 15 million sperm/ml.

Shukra Kshaya lakshana:(Ch.Su.17/70(3),Su.Su.15/13(4),A.H.Su.11/20(5))

- *Durbalata* (General debility)
- *Pandutavam*(Pallor)
- *Sadan* (Bodyache)
- *Sharm* (Tiredness)
- *MukhaSosha* (Dryness of mouth)
- *MedhaVrishanaVedna*(Pain in penis and Scrotum)
- *Dhumayativa*(Burning in penis and Urethra)
- *ChiratPraseka* or *Alpa-Rakta-YuktaShukraPravritti* or *ShukraAvisarga* (Delayed or blood mixed or no ejaculation)
- *MaithuneAshakti* (Problematic or not satisfactory coitus)
- *Klaivya* (Impotence)

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Clinical finding:

General Examination and Personal history: General Condition of the patient was good .No deviation in vital signs. He is muslim of Indian ethnicity. He had a moderate appetite, Normal bladder, bowel habit and regular sleep pattern. He had a sedentary life style, well built and well nourished .He had BMI 26.6 and waist circumference 102 cm. His *prakruti* was *Kaphaja* Dominant and *sarata* was *mansa-meda sarata*. He had *pravar satva*.

Clinical Investigation: Investigation was carried out before intervention like routine hematological test complete blood count (CBC), liver function test (LFT), Kidney function test(KFT), lipid profile ,blood sugar fasting and Post pradial ,urine routine and microscopic. All investigation was under normal range except SGOT and SGPT which were mildly increased.

Therapeutic intervention:

The patient was admitted and planned for *Mustadi Yapana basti*(therapeutic enema) for 15 days. Before administration of *basti*, local *Abhyanga* (oil massage) with *bala taila* and *vashpa swedana* (steam bath) has been done as *poorva karma*.*Mustadi Yapana vasti*(Table 03) of 600 ml is administered to patient for 15 days. Properties of *Mustadi yapana basti* and their properties are described in Table 03.

Table 03: Ingredients of the Formulation and their properties

| S.No | Drug | Latin Name | Part Used | Rasa | Guna | Virya | Vipaka | Dosh-ganta | Karma |
|--------------------|-------------------|------------------------------|-----------------------|----------------------------|------------------------------|--------------|---------------|--------------------|--------------------------------|
| KwathDravya | | | | | | | | | |
| 01. | <i>Nagarmotha</i> | <i>Cyperus rotundus</i> | Rhizome | <i>Tikta Katu Kashya</i> | <i>Laghu Ruksh</i> | <i>Shita</i> | <i>Katu</i> | <i>Kapha Pitta</i> | <i>Pachan Shukra-shodana</i> |
| 02. | <i>Patha</i> | <i>Cissampelos Pareira</i> | Root | <i>Tikta</i> | <i>Laghu Tikshna</i> | <i>Ushna</i> | <i>Katu</i> | <i>Kapha Pitta</i> | <i>Shukra-shodana</i> |
| 03. | <i>Giloy</i> | <i>Tinospora Cordifolia</i> | Stem | <i>Tikta Kashya</i> | <i>Guru Snigdha</i> | <i>Ushna</i> | <i>Madhur</i> | <i>Triodosha</i> | <i>Rasayana</i> |
| 04. | <i>Kutki</i> | <i>Picrorhiza kurroa</i> | Root | <i>Tikta</i> | <i>Laghu Ruksha</i> | <i>Shita</i> | <i>Katu</i> | <i>Kapha pitta</i> | <i>Shukra Shodan</i> |
| 05. | <i>Bala</i> | <i>Sida cordifolia</i> | Root | <i>Madhur</i> | <i>Laghu Snigdha Picchil</i> | <i>Shita</i> | <i>Madhur</i> | <i>Vata pitta</i> | <i>Balya Brihan Ojovardhan</i> |
| 06. | <i>Rasna</i> | <i>Pluchea Lanceolata</i> | Leaf | <i>Tikta</i> | <i>Guru</i> | <i>Ushna</i> | <i>Katu</i> | <i>Vata</i> | <i>Bala-varadhan</i> |
| 07. | <i>Purnava</i> | <i>Boerhavia diffusa</i> | Panchang | <i>Madhur Tikta Kashya</i> | <i>Laghu Ruksh</i> | <i>Ushna</i> | <i>Madhur</i> | <i>Tridosha</i> | <i>vrishya</i> |
| 08. | <i>Manjistha</i> | <i>Rubia cordifolia</i> | Root | <i>Tikta Madhur Kashya</i> | <i>Guru Ruksh</i> | <i>Ushna</i> | <i>Katu</i> | <i>Kapha pitta</i> | <i>Shukra-shodan</i> |
| 09. | <i>Amaltasa</i> | <i>Cassia fistula</i> | Root bark, fruit Pulp | <i>Madhur</i> | <i>Guru Snigdha Mridu</i> | <i>Shita</i> | <i>Madhur</i> | <i>Vata pitta</i> | <i>Shukra-janan</i> |
| 10. | <i>Khas</i> | <i>Vetiveria Zizanioidis</i> | Root | <i>Tikta Madhur</i> | <i>Laghu Ruksh</i> | <i>Shita</i> | <i>Katu</i> | <i>Kapha pitta</i> | <i>Shukra-ajanana</i> |
| 11. | <i>Trayamana</i> | <i>Gentiana kurro</i> | Root | <i>Tikta</i> | <i>Laghu Ruksh</i> | <i>Ushna</i> | <i>Katu</i> | <i>Vatakapha</i> | <i>Shukra-shodan</i> |
| 12. | <i>Gokhru</i> | <i>Tribulus Terrestris</i> | Root | <i>Madhur</i> | <i>Guru Snigdha</i> | <i>Shita</i> | <i>Madhur</i> | <i>Vata pitta</i> | <i>Vrishya, pushiiprada</i> |

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|--------------------------|-----------------------------|------------------------------|---------------|---------------------------|---------------------------|-------|--------|----------------|--|
| 13. | Laghupanchm ula | | Root | Kashya Tikta Madhur | | | | Vata pitta | Balya Brihana |
| 14. | Madanphal | Randia spinosa | Fruit | Kashya Madhur Tikta | Laghu Ruksh | Ushna | Katu | Vatakapha | Shukra- shodan |
| Kalka Dravya | | | | | | | | | |
| 15. | Sauf | Foenieulum vulgare | Fruit Root | Madhur Katu Tikta | Laghu Snigdha | Shita | Madhur | Vata pitta | Vrishya |
| 16. | Priyangu | Callicarpa macrophylla | Flower | Madhur Kashya Tikta | Guru Ruksh | Shita | Katu | Tridosha | Praja- sthapana |
| 17. | Mulethi | Glycyrrhiza glabra | Root | Madhur | Guru Snigdha | Shita | Madhur | Vata pitta | Balya Shukra- vardhana |
| 18. | Inderyava | Holarrhena Antidysentrica | Stem bark | Tikta Kashya | Laghu Ruksh | Shita | Katu | Kapha pitta | Shukra- shodan |
| 19. | Rasot | Berberis aristata | Root | Tikta Kashya | Laghu Ruksha | Ushna | Katu | Kaphapitta | Rasayana Yakritutejaka |
| 20. | Saindhav Lavana | Sodium Chloride | | Lavana | Laghu, Snigdha | Shita | Madhur | Tridosha | Vrishya, Dee pana, Rochana, |
| Conventional Drug | | | | | | | | | |
| 21. | Kshira (Cow) | Milk | | Madhur | Guru Snigdha | Shita | Madhur | Pitta | Vṛiṣya, Śukrala, Rasāyana |
| 22. | Madhu (Organic India) | Honey | | Madhura, Kashaya | Guru, Ruksha, Shita | Shita | Katu | Kapha pitta | Vriyavardhka, Medhya, Sroto- shodhana |
| 23. | Cow Ghee (Organic India) | | | Madhur | Guru Snigdha | Shita | Madhur | Vata pitta | Vṛiṣya, Śukrala, Rasāyana |
| 24. | Mansa rasa (Aja) | | | Madhur | Laghu | | | | Balaya, vriya vardhak |

All the Ayurvedic principles are kept in mind while preparation of *basti*.

Assessment Criteria:

Assessment shall be made by the improvement on the subjective and objective parameters before and after *Yapana Basti* on *Shukra dhatu*.

Subjective Parameters:

The main symptoms of *Shukra Kshaya* (Chaturvedi Gorakhnath *et.al*, 2009; Shashtri Ambikadutta.2008b; Kaviraj Atridev Gupta, 2011) shall be given grading which will be assessed.

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Objective Parameters:

- Semen Analysis Report
- Biomarker Analysis (Serum FSH, Serum LH, Serum Testosterone, Serum Inhibin-B).

RESULTS

There was marked improvement in sperm count (Table 05) as well as sperm motility after the intervention. Patient showed marked improvement in signs and symptoms of *Shukra Kshaya* and *klaivya* as per the classics (Table 04) and modern parameters. There was marked improvement in serum testosterone & serum Inhibin-B level after the *Mustadi Yapana basti* in this case. Level of serum LH decreased after *basti* (Table 06).

Table 04: Effect of therapy on grading of *Shukra Kshaya lakshana*.

| S.No | Lakshana | Before treatment | After Treatment |
|------|--|------------------|-----------------|
| 01. | <i>Daurbalya</i> (Weakness or General Debility) | 4 | 1 |
| 02. | <i>Panduta</i> (Paleness or Pallor) | 3 | 1 |
| 03. | <i>Agnisada</i> (Decreased capacity of digesting the food properly) | 2 | 2 |
| 04. | <i>Shrama</i> (Satigue or Tiredness) | 4 | 2 |
| 05. | <i>Mukha Shosha</i> | 4 | 2 |
| 06. | <i>Medhra-Vrishana Vedana</i> (Pain in scrotum and penis) | 3 | 2 |
| 07. | <i>Medhra Dhumayana</i> (Burning sensation in penis or urethra) | 3 | 0 |
| 08. | <i>Chirat Praseka or Alpa-Rakta-Yukta Shukra Pravritti or Shukra Avisarga</i> (Delayed or blood mixed or no ejaculation) | 3 | 1 |
| 09. | <i>Maithune Ashakti</i> (Problematic or not satisfactory coitus) | 4 | 1 |
| 10. | <i>Klaivya</i> measured by international index of erectile dysfunction | 10 | 24 |

Table 05: Effect of therapy on objective parameters (semen analysis).

| S.No | Investigation | Before Intervention | After intervention |
|------|-------------------|---------------------|--------------------|
| 01. | Semen volume | 0.5 ml | 02 ml |
| 02. | Semen color | Whitish | Whitish |
| 03. | Reaction | Alkaline | Alkaline |
| 04. | Total sperm count | 12 million | 70 million |
| 05. | Motile sperm | 25% | 30% |
| 06. | Sluggish sperm | 30% | 50% |
| 07. | Immotile sperm | 45% | 20% |

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Table 06: Effect of therapy on objective parameters (Serum biomarkers of spermatogenesis).

| S.No | Investigation | Before Intervention | After intervention |
|------|--------------------|---------------------|--------------------|
| 01. | Serum FSH | 9.10 mIU/ml | 9.16 mIU/ml |
| 02. | Serum LH | 11.60 mIU/ml | 4.10 mIU/ml |
| 03. | Serum Testosterone | 15.20 ng/dl | 382.88 ng/dl |
| 04. | Serum Inhibin- B | 102.29 pg/mL | 221.99 pg/mL |

There were no adverse side effects of the given treatment to the patient.

DISCUSSION

The person who is infertile is said to be *Nindya* according to *Acharya Charaka* (6) (Ca.Ci.2/1). The person without a child is compared to be a tree without branches (6)(Ca.Ci.2/1/16). Infertility affects the psychological harmony, sexual life and social function of the couple. The incidence of male infertility is about 50% of infertile couples. It may vary from place to place, nation to nation but magnitude of the problems remains the same. Even with the advent of modern techniques, the success rate in conception is very low; the cost of treatment is also not affordable by all. The agony, sorrow of infertile patients remains almost same even today. Considering the wide spread nature in the society and its depth of causing innumerable problems, thus the subject of infertility is selected. Out of many factor of infertility, *Shukra Kshaya* is one of the important factor.

According to *Acharya Charaka's Basti karma* is important for the treatment of *Vata Dosha*. *Vata Dosha* is mainly involved in the condition of *Shukra Kshaya*. Moreover, the *Yapana Basti* are having *Rasayana* effect and can be administered for longer duration without any adverse effects. The ingredient drugs of *Mustadi Yapana Basti* have predominant *Vatahara*, *Rasayana* & *Vajikaran* properties. Drugs used in preparation of *Mustadi Yapanaa basti* especially attributed with property of "*Shukra-mansa-balajanan*". Due to drugs like *milk*, *cow ghee*, *Sida cordifolia*, *Pluchea lanceolata*, *Tribulus terrestris*, *Glycyrrhiza glabra* which have properties of *balya*, *snigdha*, *jivaniya*, *guru*, and *madhur rasa* and *vipak*, *sheet virya*. These properties will reduces *dourbalya* as well as others symptoms due to viatited *vata*.

CONCLUSION

Mustadi Yapana basti provided significant relief in the symptoms of *Shukra Kshaya* (Oligozoospermia). *Basti* may have acted on the systemic symptoms of *Shukra Kshaya* as well as give significant improvement on the seminal parameters like sperm count, sperm motility. *Mustadi Yapana basti* gave significant improvement on the serum biomarkers specially on serum testosterone. Thus *Mustadi Yapana basti* is effective treatment in the management of *Shukra Kshaya* (oligozoospermia).

Patient Perspective: Patient told marked improvement in confidence during sexual intercourse. Patient told improvement in erection and performance during sexual intercourse. Patient felt better and felt marked improvement in weakness and increase level of sexual desire now. Overall patient had satisfactory and better sexual life after intervention.

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