ROLE OF NIMBADI GHANAVATI IN THE TREATMENT OF SWETAPRADARA w.s.r. ABNORMAL VAGINAL DISCHARGE

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ABSTRACT

Shwetapradara (Abnormal Vaginal discharge) in the reproductive age group is the most common complaint encountered everyday both by gynecologists and general practitioners. It occurs in 1-14% of all women in the reproductive age group. It is responsible for 5-10 million OPD visits per year throughout the world. The prevalence of vaginal discharge in India is estimated to be 30%. The current study is an attempt to evaluate the efficacy of Nimbadi Ghanavati in Swetapradara. Married woman age group from 20yrs to 60yrs, with clinical features of Shwetapradara and having positive causative organism by wet smear test have been selected for the trial. Total 52 patients were registered from the OPD of Streeroga and Prasooti Tantra Department, IPGT & RA, Jamnagar. Among registered patients, 50 patients completed the course of treatment. NimbadiGhanavati (two tablets of 500mg each) was given orally thrice a day before meal for 15 days continuously. Overall effect on subjective and objective parameters was found 81.23% of patients without any complication with complete remission (12%), markedly improvement (70%) and moderately improvement (12%). The data revealed that Nimbadi Ghanavati is very much effective therapy in the management of abnormal vaginal discharge. It can be safely prescribed in syndromic management of Swetapradara.

Keywords: Abnormal Vaginal discharge, Nimbadi Ghanavati, Swetapradara.

INTRODUCTION

Ayurveda is rich in pharmaceutical preparations. In management of Shwetapradara many Kalpana like Yoni Prakshalana, Yoni Avachurnana, Yoni Pichu, Yoni Vartiete. are mentioned. Shwetapradara (Abnormal Vaginal discharge) in the reproductive age group is the most common complaint encountered everyday both by gynaecologists and general practitioners. It occurs in 1-14% of all women in the reproductive age group and is responsible for 5-10 million OPD visits per year throughout the world. The prevalence of vaginal discharge in India is estimated to be 30%.¹ Abnormal vaginal discharge also predisposes to significant morbidity in the form of pelvic inflammatory diseases, infertility, endometriosis, cuff cellulitis, urethral syndrome, pregnancy loss, preterm labour etc. Most common cause of symptomatic vaginal discharge is bacterial vaginosis (33-47%)², followed by candidiasis (20-40%) and trichomoniasis (8-10%)³. These three conditions account for 90% of all aetiologies of abnormal vaginal discharge. Multiple infections can also coexist. Due to today’s food habits, changing life style and especially due to continuously nagged and accepted as an essential feature of womanhood vaginal discharge has emerged out as one of the commonest reproductive health problem of women. Regarding the gravity of the disease, it neither causes mortality nor morbidity but it is accountable to the problem of sexual anxiety and even sometimes fears of carcinoma or failure to conceive. Apart from this, it also causes mental stress, local inconvenience to the
patient which deteriorates the day to day work and the quality of life. Thus it does not cut the years of life but the life of the years. Hence, it was planned with the aim and objective that to evaluate the efficacy of Nimbadi Ghanavati in Swetapradara and a significant data based treatment regimen can be established through Ayurveda.

MATERIALS AND METHODS
The Patients attending from Out-Patient Department of Stree Roga and Prasooti Tantra, IPGT&RA, Jamnagar fulfilling the criteria for selection were included into the study irrespective of caste, religion etc. A special research proforma was prepared.

Ethical clearance
Study started only after obtaining Ethical clearance from the Institutional Ethics Committee. Ethical clearance No.: PGT/7/-A/Ethics/2013-2014/2753 dated on 13/11/2013

Criteria for selection of cases
Written informed consent of the patients had been taken before including in the study.

Inclusion criteria:
- Married women
- Age between 20 years to 60 years.
- The patients having clinical signs & symptoms of Swetapradara.
- The patients having positive causative organism by wet smear test.

Exclusion Criteria:
- Unmarried women
- Age below 20 years and above 60 years
- Pregnant women
- Patients suffering from Tuberculosis, Sexually Transmitted Disease like VDRL, HIV, gonorrhea, Genital malignancy and Congenital and any other pathologies of reproductive tract.

Criteria for Diagnosis:-
- Abnormal vaginal discharge present during examination.
- Pathogens present in wet slide study and vaginal swab culture.

Laboratory Investigations:
- Routine Hematological Examination - Hb, T.L.C., D.L.C., E.S.R.
- Routine and Microscopic Examination of Urine
- Serological test-VDRL, HIV
- RBS
- U.S.G. if required
- Wet slide study of vaginal smear
- Vaginal swab culture and sensitivity
- Gram stains for Bacteriology
- Vaginal pH
- Microbial study

Selection of drug
Nimbadi Yoga is an AnubhutaYoga[^4] which was used for Shwetapradara due to its Stambhana, Krimighna, Kandudhna, Vranashodhana, Vranaropana, Putihara etc. Properties due to raw drugs (Nimba, Triphala, Shudhda Sphatika and Madhu) used in it. Previously two research works which were carried out on local route of administration of Nimbadi Yoga gave very encouraging results.^[5][^6] Hence, it was planned to continue this study with the aim to evaluate the efficacy of Nimbadi Yoga as a Nimbadi Ghanavati by oral route of administration so that a significant data based treatment regimen for Swetapradara can be established through Ayurveda.

The drug Nimbadi Ghanavati was prepared in the Pharmacy of Gujarat Ayurved University, Jamnagar after identification of raw drugs (fresh Nimba Patra, Triphala Yavakuta, Shuddha Sphatika & Madhu) in Pharmacognosy department and then analyzed pharmaceutically.

Treatment protocol
Nimbadi Ghanavati (500 mg each) was given orally thrice a day before meal for 15 days continuously with the consent of the patient.

Criteria of Assessment:
Assessment criteria had been adopted in detail on basis of both subjective & objective parameters.

Subjective parameters:
- Yonitaha Srava (White discharge per vagina)
- Smell
- Consistency
- Yoni kandu (Itching vulva)
- Katishula (Backache)
- Udarashula (Pelvic pain)
- Mutradaha (Burning Micturation)
- During examination local tenderness

Objective parameters:
- Based on 10% KOH Preparation
- Based on Aerobic Culture
- Based on Fungal Culture
- Based on wet preparation (pus cell)
- Based on wet preparation (Trichomonas Vaginalis examination)
- Based on Vaginal pH
Overall assessment of the therapy

- < 25%: Unchanged
- 26 - 50%: Mild Positive Response
- 51 - 75%: Moderate Positive Response
- 76 - 99%: Marked Positive Response
- 100%: Complete Remission

Statistical test: Timely noted observation had been subjected to statistical analysis for the level of significance with paired student’s t’ test as well as with percentage.

Follow up: Patients had been followed after completion of the treatment for 1 month.

OBSERVATIONS AND RESULTS

Table 1: Effect of Nimbadi Ghanavati on General symptoms of 50 patients of Shwetapradara

<table>
<thead>
<tr>
<th>Sr.no</th>
<th>Investigation</th>
<th>Mean Score</th>
<th>% of relief</th>
<th>S.D. (±)</th>
<th>N</th>
<th>S.E. (±)</th>
<th>‘t’</th>
<th>P</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>B.T.</td>
<td>A.T.</td>
<td></td>
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</tr>
<tr>
<td>1.</td>
<td>Yonitah Srava</td>
<td>2.52</td>
<td>0.54</td>
<td>78.57</td>
<td>0.622</td>
<td>52</td>
<td>0.088</td>
<td>22.496</td>
</tr>
<tr>
<td>2.</td>
<td>Yoni Daurgandhya</td>
<td>1.5</td>
<td>0</td>
<td>100.0</td>
<td>0.583</td>
<td>50</td>
<td>0.0842</td>
<td>17.812</td>
</tr>
<tr>
<td>3.</td>
<td>Consistency</td>
<td>2</td>
<td>0.22</td>
<td>89.00</td>
<td>0.815</td>
<td>52</td>
<td>0.115</td>
<td>15.436</td>
</tr>
<tr>
<td>4.</td>
<td>Yoni Kandu</td>
<td>2.68</td>
<td>0.76</td>
<td>71.64</td>
<td>0.528</td>
<td>52</td>
<td>0.0747</td>
<td>25.695</td>
</tr>
<tr>
<td>5.</td>
<td>Yoni Vedana</td>
<td>1.84</td>
<td>0.18</td>
<td>90.22</td>
<td>0.519</td>
<td>52</td>
<td>0.0735</td>
<td>22.598</td>
</tr>
</tbody>
</table>

Table 2: Effect of Nimbadi Ghanavati on Associated symptoms of 50 patients of Shwetapradara

<table>
<thead>
<tr>
<th>Sr.no</th>
<th>Investigation</th>
<th>Mean Score</th>
<th>% of relief</th>
<th>S.D. (±)</th>
<th>N</th>
<th>S.E. (±)</th>
<th>‘t’</th>
<th>P</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>B.T.</td>
<td>A.T.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Katishoola</td>
<td>2.32</td>
<td>0.6</td>
<td>74.14</td>
<td>0.497</td>
<td>52</td>
<td>0.070</td>
<td>24.495</td>
</tr>
<tr>
<td>2.</td>
<td>Udarashoola</td>
<td>1.52</td>
<td>0.18</td>
<td>88.16</td>
<td>0.479</td>
<td>51</td>
<td>0.068</td>
<td>19.801</td>
</tr>
<tr>
<td>3.</td>
<td>Mutradahha</td>
<td>2.188</td>
<td>0.229</td>
<td>89.52</td>
<td>0.617</td>
<td>50</td>
<td>0.090</td>
<td>21.975</td>
</tr>
</tbody>
</table>

Table 3: Effect of Nimbadi Ghanavati on Wet vaginal smear and culture investigations of 50 patients of Shwetapradara

<table>
<thead>
<tr>
<th>Wet vaginal smear</th>
<th>% of relief</th>
<th>Mean score</th>
<th>S.D. (±)</th>
<th>N</th>
<th>S.E. (±)</th>
<th>Paired test “t”</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B.T.</td>
<td>AT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In Normal saline</td>
<td>Trichomonas vaginalis</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Pus cell</td>
<td>54.55</td>
<td>1.375</td>
<td>0.625</td>
<td>1.235</td>
<td>40</td>
<td>0.195</td>
</tr>
<tr>
<td>In KOH</td>
<td>D – Yeast</td>
<td>66.67</td>
<td>0.900</td>
<td>0.400</td>
<td>0.707</td>
<td>10</td>
<td>0.224</td>
</tr>
<tr>
<td>Aerobic Culture</td>
<td>Pseudomonas arecolosa</td>
<td>80.00</td>
<td>0.909</td>
<td>0.273</td>
<td>0.674</td>
<td>11</td>
<td>0.203</td>
</tr>
<tr>
<td></td>
<td>Escherichia coli</td>
<td>62.50</td>
<td>0.889</td>
<td>0.444</td>
<td>0.726</td>
<td>09</td>
<td>0.242</td>
</tr>
<tr>
<td></td>
<td>Enterobactor species</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fungal Culture</td>
<td>Candida albicans</td>
<td>60.00</td>
<td>0.714</td>
<td>0.571</td>
<td>0.900</td>
<td>07</td>
<td>0.340</td>
</tr>
<tr>
<td></td>
<td>Candida glabrata</td>
<td>66.67</td>
<td>1.000</td>
<td>0.333</td>
<td>0.577</td>
<td>03</td>
<td>0.333</td>
</tr>
<tr>
<td>Vaginal pH</td>
<td>08.12</td>
<td>6.900</td>
<td>6.340</td>
<td>0.675</td>
<td>50</td>
<td>0.0954</td>
<td>5.867</td>
</tr>
</tbody>
</table>
Table 4: Effect of Nimbadi Ghanavati on routine Hematological investigations of 50 patients of Shwetapradara

<table>
<thead>
<tr>
<th>Sr.no</th>
<th>Investigation</th>
<th>Mean Score</th>
<th>% of relief</th>
<th>S.D. (±)</th>
<th>N</th>
<th>S.E. (±)</th>
<th>'t'</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hb%</td>
<td>11.56</td>
<td>11.55</td>
<td>0.12</td>
<td>0.352</td>
<td>50</td>
<td>0.0498</td>
<td>0.281</td>
</tr>
<tr>
<td>2.</td>
<td>TLC</td>
<td>7364</td>
<td>7196</td>
<td>2.28</td>
<td>1172.55</td>
<td>50</td>
<td>165.824</td>
<td>1.013</td>
</tr>
<tr>
<td>3.</td>
<td>N</td>
<td>60.18</td>
<td>58.26</td>
<td>3.19</td>
<td>6.599</td>
<td>50</td>
<td>0.933</td>
<td>2.057</td>
</tr>
<tr>
<td>4.</td>
<td>L</td>
<td>33.48</td>
<td>35.26</td>
<td>5.32</td>
<td>5.64</td>
<td>50</td>
<td>0.798</td>
<td>2.232</td>
</tr>
<tr>
<td>5.</td>
<td>E</td>
<td>3.82</td>
<td>3.88</td>
<td>1.57</td>
<td>1.867</td>
<td>50</td>
<td>1.867</td>
<td>0.227</td>
</tr>
<tr>
<td>6.</td>
<td>M</td>
<td>2.52</td>
<td>2.6</td>
<td>3.17</td>
<td>0.778</td>
<td>50</td>
<td>0.11</td>
<td>0.727</td>
</tr>
<tr>
<td>7.</td>
<td>ESR</td>
<td>25.08</td>
<td>21.12</td>
<td>15.79</td>
<td>20.589</td>
<td>50</td>
<td>2.912</td>
<td>1.36</td>
</tr>
</tbody>
</table>

Table 5: Effect of Nimbadi Ghanavati on routine Urine investigations of 50 patients of Shwetapradara

<table>
<thead>
<tr>
<th>Sr.no</th>
<th>Investigation</th>
<th>Mean Score</th>
<th>% of relief</th>
<th>N</th>
<th>S.D. (±)</th>
<th>S.E. (±)</th>
<th>'t'</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Urine pus cell</td>
<td>4.74</td>
<td>3.13</td>
<td>33.84</td>
<td>49</td>
<td>9.84</td>
<td>1.406</td>
<td>1.14</td>
</tr>
<tr>
<td>2.</td>
<td>Epi. Cell</td>
<td>2.20</td>
<td>2.20</td>
<td>0.37</td>
<td>49</td>
<td>7.504</td>
<td>1.072</td>
<td>0.00761</td>
</tr>
<tr>
<td>3.</td>
<td>Urine RBC</td>
<td>9.86</td>
<td>2.68</td>
<td>72.83</td>
<td>14</td>
<td>15.789</td>
<td>4.22</td>
<td>1.701</td>
</tr>
<tr>
<td>4.</td>
<td>Albumin</td>
<td>0.70</td>
<td>0.44</td>
<td>37.50</td>
<td>23</td>
<td>0.915</td>
<td>0.191</td>
<td>1.367</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Out of 52 registered patients, 50 patients had completed the course of treatment. Overall effect was found 81.23% with 83.56% in subjective parameters and 60% in objective parameters. 06 patients (12%) got complete remission, 35 patients (70%) were found markedly improved, 06 patients (12%) were found moderately improved, and 3 patients (6%) were found mild improvement & no any patients remain unchanged.

Regarding general symptoms as well as associated symptoms, highly significant improvement (p<0.001) was observed by paired 't' test and percentage relief was found around 70 to 80% (Table 1 & 2). Effect on all general Yonigata Symptoms may be due to Kashaya & Tikta Rasa, Kandugna, Krimighna and Kapha-Kleda Hara properties of NimbadiYoga by oral route of administration. Relief in all associated symptoms is due to Tridoshahara and Rasyayana properties of drug. Highly significant improvement in relieving pus cells in Normal saline and in maintaining vaginal pH while significant improvement was noted in aerobic bacteria. Good percentage relief was found in fungal culture report. Kashaya, Tikta & Amla Rasa of the drug is very helpful in maintaining the vaginal pH (Table 3). No remarkable change was found in Hematological investigations & Urine routine as well as microscopic examination and all the values remained within normal limits after the treatment. It may be because the effect of drugs did not have any major effect systemically (Table 4 & 5). In follow up study no patient had complaint of recurrence of symptoms within one month and no any adverse drug reaction was found during treatment & in follow up period.

**Probable Mode of action of Drug**

Cure of disease takes place due to SampraptiVighatana. This can be explained by the action of Rasa, Guna, Virya, Vipaka and Prabhava of drugs in the various Srotasas and on Dosha and Dushya in human body. NimbadiGhanavati has Kashaya, Tikta, Amla, Madhura and Katu Rasa; Laghu, Ruksha, Sheeta, Guru and SnigdhaGuna; Sheeta and UshnaVirya; Madhura and KatuVipaka and Tridoshahara specially Kapha-Pittahara properties by which it breaks the Samprapti.

NimbadiGhanavati possesses mainly Kashaya Rasa. Kashaya Rasa is mainly formed by conjugation of Vayu and PrithviMahabhuta. Vayu is Ruksha in quality and dries up the excessive fluids present in the tissues while Prithvi by virtue of Katina and ShhiraGuna which are opposite to Drava and SaraGuna reduces the Srava. So, Kashaya Rasa by virtue of its Guna restrains Srava.

The second dominant Rasa in NimbadiGhanavati is Tikta, Amla & MadhuraRasa. Tiktarasa is a combination of Vayu and AkashaMahabhuta. These two Mahabhutas are having qualities opposite to Kapha. TiktaRasa is having Kundugna, Kleda, Puya and Kaphashoshna pharmacological properties. While Amla Rasa is possessing Laghu and UshnaGuna which quash the Kapha. Some of the ingredients of NimbadiGhanavati possess Madhura Rasa which is Vata and Pitta Shamaka and also
The third dominant Rasa is Katu Rasa in NimbadiGhanavati. This Rasa is formed by Vayu and Agni-Mahabhuta, [16] having qualities opposite to Kapha (Prithvi & Jala), thus, reduces Srava. KatuRasa also hasSheethadhagni, Kabudghna and Abhisshyanda-Kleda-Sneha Upahanti properties.[17] By these properties it eases Srava as well as reduces Shotha, Kashaya, Tikta and Katu Rasa have Krimighna[18] property which directly inhibits the growth of Krimi and finally diminishes Srava.

Most of the ingredients of NimbadiGhanavati possess Laghu and RukshaGuna. By the virtue of this property this may pacify vitiated Kapha and Kleda and supports the function of the other Rasas. RukshaGuna also restrains Srava by virtue of its Stambhana action. Snigda and Guru Guna is predominant in some ingredients. So, these ingredients alleviate vitiated Vata while SheetaGuna alleviates vitiated Pitta. Thus, ultimately help to stop secretion. Madhu has YogavahiGuna so, it may act quickly even in smaller dose.

The equal ingredients of NimbadiGhanavati are having Sheeta & UshnaVirya. SheetaVirya drugs normalize the condition of vitiated Pitta. And the UshnaVirya drugs pacify vitiated Vata and Kapha. By virtue of these qualities NimbadiGhanavati may alleviate the vitiated Vata, Pitta and Kapha which eradicates Shwetapradara. SheetaVirya drugs also act in Srotasas and cause Stambhana. In this way trial drug restrains Srava by Stambhana action.

So, Probable mode of action of NimbadiGhanavati can be understood as:

- **Yoni Shodhana-** Clean the vagina- by VranaShodhana Property
- **Restrain Srava - Kashaya, Tikta and KatuRasa property Laghu and RukshaGuna.**
- **Kill causative microorganism - Krimighna, antimicrobial, antibacterial, anti fungal, antiviral properties**
- **Rejuvenate the epithelium –RasayanaPrabhava, anti-oxidant and MadhuraRasa property like Prinana, Jivana etc.**
- **Improving the body defense system - Immunomodulator property**

The modern technology has proved that drugs of NimbadiGhanavati e.g. Nimba has anti-inflammatory, antimicrobial,[19][20][21][22] anti-bacterial[23] and immunomodulatory[24] pharmacological properties by which it kills the causative microorganism, reduces inflammation and also supports the vaginal defense mechanism. *Triphala* destroys micro-organisms, repairs damaged tissue and also increases immunity by its rejuvenative nature and exhibits antiviral, antibacterial, anti fungal, immuno-modulatory and antioxidant properties.[25] Honey has also anti bacterial property.[26] It kills bacteria by plasmolysis & no organism can successfully multiply to significant amounts in honey. A functional relationship between hydrogen peroxide produced in honey and antibacterial activity strongly pointed to H2O2 as the main contributor to antibacterial activity.[27] Thus, it inhibits the micro-organism growth and break the *Samprapti. Sphatika* has styptic and astringent Properties by which it restrains Srava. It also acts as adjuvant.[28]

**CONCLUSION**

The study is overall concluded that the NimbadiGhanavati is highly effective in reducing subjective & objective variables of Shwetapradar i.e. abnormal vaginal discharge & will also help in deriving new conclusion and proverbs in the syndromic (Candiasis, Bacterial vaginosisis, Chlamydia, etc.) management of vaginal discharge.

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27. Katrina Brudzynski1,2,* and Robert Lannigan1 Mechanism of Honey Bacteriostatic Action Against MRSA and VRE Involves Hydroxyl Radicals Generated from Honey’s Hydrogen Peroxide


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