To Evaluate the effect of Ashwatha on Mutrakrichhra w.s.r. to E.coli

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ABSTRACT

In Ayurvedic classics E.Coli infection is not mentioned, but Krimis and Mutrakrichhra are mentioned. Most of the symptoms of Mutrakrichhra are similar with Escherichia coli infection. Escherichia coli is the major cause of urinary tract infections. The disease Mutrakrichhra has been described by almost all Acharyas. UTI is a major problem in society which causes Mutravaha Srotas Vikriti. Modern medical science physicians are facing problem in the treatment of E.coli. Infection, due to its relapse and synthetic antibiotic hazards. Due to this reason present study was planned to evaluate the efficacy of Ashwath which have been used by ancient Acharyas in Mutravaha Srotas Vikriti. In view of above fact the present trial has been undertaken to understand the effect of Ashwatha having antibacterial and diuretic properties. The present research work has been carried out with a view to provide a scientific basis for the claims made in various Ayurvedic texts regarding the effect of Shigru Ashwatha Ghana on Mutrakrichhra (UTI).

Key words: Ashwath, UTI, E.Coli, Diuretics, Mutrakrichhra, Peepal.

INTRODUCTION

The Ayurveda is the only medical science that is highly systemic, scientific and time tested and recognizes their interaction in the healing of the whole person. Ayurveda is effective not only in common elements but also in many incurable, chronic and degenerative disease. The knowledge about medicinal plants in the early age was documented systematically and organized scientifically in Ayurvedic Samhitas, Nighantus and other texts. In which we can get so many references of medicinal plants. Among all this Charaka Samhita is a vast treasure of knowledge regarding medicinal plants. Charaka is the first person who could classify the existing plants, into pharmacological categories and given 50 classes which are known as Dashemani.[1]

In the past two decades there is world wide revival of herbal drugs for the health care not only in developing but also in developed countries too. More than 80% population in the world still depends on the use of herbal drugs as they are easily available and have no side effects. Particularly in our country where modern drugs are out of reach of common people, the medication through herbal drugs play an important role for providing primary health care to the mass population. In modern review the aetiological factors of Lower UTI[2] are explained on the basis of general and host defence factors. Hormones and epithelial cell receptivity are also important factors in females. UTI occur due to colonization of micro-organisms in the urinary tract. Though Krimi are not mentioned as a Nidana of Mutrakrichhra,[3] Ayurveda gives importance to Vyadhikshamatva,[4] which is lowered in female. The
patients with positive urine culture were included in
the study so detailed description of urine from
Ayurvedic and Modern aspect is given. Various
complications, mode of treatment and prognosis are
explained. Clinical trial of drugs or a therapy have very
much important part in the work specially in clinical
subject. So trial of single drug was planned here in
this study. UTI caused by E.Coli affect female more
than male and so to find a path for the treatment of
this disease an essential attempt has been done. Acharya Charaka has kept Ashwatha in
Mutrasangrahamiya Dravya.[5] Shusruta has included it
in Nyagrodhadi Gana.[6] According to Acharya
Charaka, Ashwatha[7] is mentioned in various
formulations to cure Mutrakrichhra or urinary
disorder. Ashwatha is considered as Mutrala (diuretic)
by all the Acharyas.

OBJECTIVES

To evaluate the action of Ashwatha on E.Coli and to
study the complication if any occurs during the course
of treatment.

MATERIALS AND METHODS

Criteria for selection of patients

Inclusion Criteria

The patients attending the O.P.D. and I.P.D. of
Kayachikitsa and Research Unit of Govt. Ayurvedic
Hospital, Patna, having classical symptomatology of
Mutrakrichhra. Careful elucidation and evaluation of
medical history of patients and detailed physical and
clinical examination on the basis of proforma specially
prepared for this purpose was done. The patient
under 70 years irrespective of caste, religion, sex,
habits, Socio-economic status and those who fulfill
the diagnosis were selected for the study.

Exclusion Criteria

Patients of diabetes, hypertension, thyroid
dysfunction, carcinoma, sexually transmitted diseases,
pregnant women and other severe diseases laid down
as per rules are excluded.

Laboratory Investigation

The following laboratory investigation were under
taken in each case just before beginning of drug trial
and after completion of the study.

Haematological Investigations

The following laboratory investigation were under
taken in each case just before beginning of drug trial
and after completion of the study. Blood - Hb%, TLC,
DLC, ESR & PCV. Above mentioned all pathological
investigation were done in hospital attached
laboratory.

Urine routine and culture

Urine analysis for its colour, appearance, specific
gravity, reaction etc. and urine culture is done to rule
out microorganism.

Radiological Investigations

If required USG of urinary system (KUB) was done to
rule out any pathological obstruction in urinary tract.

Study design : Single arm clinical study

- Drug - Ashwatha Ghana
- Dose - 500 mg Bd
- Route of administration - oral
- Duration of therapy - 90 days

Diet advised

They were advised to follow the dietary restrictions
like;
1. High intake of water
2. Intake of plenty of fluid in the form of soups,
   coconut water, juices and glucose water.
4. Not to suppress the urge of micturation.
5. Complete and frequent emptying of the bladder
   at short intervals.
Method of Study

1. Selection of the patient on the basis of signs and symptoms.

2. Routine laboratory investigation and sign and symptoms scoring have been carried out before and after treatment.

3. Proper administration of the drug was done during clinical trial.

4. Trial drugs were assessed on the basis of clinical observation in course of the treatment, especially the sign and symptoms beside the laboratory investigation before and after the course of treatment.

5. The result was assessed and comparison of both drugs were done.

Criteria for assessment

1. **Cured**: This was decided on the basis of following two points. Complete relief in the initial chief complaints of the patient along with the positive improvement (100% relief in signs and symptoms). Complete no growth of organism in urine culture examination.

2. **Moderately improvement**: 30-59% relief in sign and symptoms.

3. **Mild improvement**: below - 30% relief in sign and symptoms

4. **Unchanged - No relief**: This was the group of patients in our series which did not report either symptomatic relief in their basic complain and not have negative urine examination report after treatment.

**Statistical Analysis**

<table>
<thead>
<tr>
<th>Insignificant</th>
<th>p&gt;0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td>Significant</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>Highly Significant</td>
<td>P&lt;0.001</td>
</tr>
</tbody>
</table>

**Observations and Results**

**Table 1: Effect of Ashwatha Ghana on haematological values in patients of Mutrakrichhra.**

<table>
<thead>
<tr>
<th>Haematological Value</th>
<th>Mean Score</th>
<th>D</th>
<th>% Change</th>
<th>S. D</th>
<th>S. E</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT</td>
<td>AT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hb%</td>
<td>11.16</td>
<td>11.01</td>
<td>0.15</td>
<td>1.32</td>
<td>0.34</td>
<td>0.08</td>
<td>1.9</td>
</tr>
<tr>
<td>TLC</td>
<td>10.05</td>
<td>8566.67</td>
<td>148</td>
<td>3.33</td>
<td>14.7</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>62.15</td>
<td>59.7</td>
<td>2.45</td>
<td>3.94</td>
<td>5.05</td>
<td>1.13</td>
<td>2.1</td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>33.65</td>
<td>32</td>
<td>1.65</td>
<td>4.90</td>
<td>4.02</td>
<td>0.9</td>
<td>1.8</td>
</tr>
<tr>
<td>ESR</td>
<td>36.3</td>
<td>28.65</td>
<td>7.65</td>
<td>21.0</td>
<td>8.84</td>
<td>1.98</td>
<td>3.8</td>
</tr>
<tr>
<td>S.creatinine</td>
<td>1.01</td>
<td>0.94</td>
<td>0.07</td>
<td>6.93</td>
<td>0.12</td>
<td>0.03</td>
<td>2.5</td>
</tr>
</tbody>
</table>

The mean haemoglobin percentage decrease from 11.16 gm% to 11.01 gm% which was statistically insignificant (P>0.05). Initial score in the total leukocyte count was 10050 which was decreased to 8566.67 which was significant (P<0.05). There was an decreased observed in the mean neutrophil form 62.15 to 59.47 which was significant (P<0.05). The initial mean score of lymphocytes was 33.65 which was decreased to 32 which was statistically significant (P>0.05).

The ESR decreased from mean score of 36.3 to 28.65 which was statistically significant (P<0.01). The mean score of S.cretanine was 1.01 which was decreased to 0.94 after treatment which was insignificant.
Table 2: Effect of Ashwatha Ghana on clinical symptoms in patients of Mutrakrichhra.

<table>
<thead>
<tr>
<th>Clinical Symptoms</th>
<th>Mean Score</th>
<th>D</th>
<th>% Relief</th>
<th>S.D</th>
<th>S.E</th>
<th>T</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burning Micturition</td>
<td>2.6</td>
<td>1</td>
<td>1.6</td>
<td>65.53</td>
<td>0.8</td>
<td>0.4</td>
<td>4</td>
</tr>
<tr>
<td>Frequent Micturition</td>
<td>1.6</td>
<td>1</td>
<td>0.3</td>
<td>41.87</td>
<td>0.4</td>
<td>0.1</td>
<td>3.2</td>
</tr>
<tr>
<td>Loin Pain</td>
<td>0.5</td>
<td>0</td>
<td>0.3</td>
<td>63.64</td>
<td>0.6</td>
<td>0.1</td>
<td>2.3</td>
</tr>
<tr>
<td>Bodyache</td>
<td>0.9</td>
<td>0</td>
<td>0.3</td>
<td>38.8</td>
<td>0.6</td>
<td>0.1</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Table 3: Sensitivity of Ashwatha Ghana.

<table>
<thead>
<tr>
<th>Range of Sensitivity</th>
<th>No of Samples</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>+++</td>
<td>02</td>
<td>02</td>
<td>10</td>
</tr>
<tr>
<td>++</td>
<td>12</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>+</td>
<td>06</td>
<td>06</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 4: Effect of Ashwatha Ghana on Urine Culture and Sensitivity.

<table>
<thead>
<tr>
<th>Urine Examination</th>
<th>Mean Score</th>
<th>D</th>
<th>% Relief</th>
<th>S.D</th>
<th>S.E</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture &amp; Sensitivity</td>
<td>1.4</td>
<td>0.7</td>
<td>4.88</td>
<td>0.7</td>
<td>3.9</td>
<td>&lt;0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>

For the burning micturation there was 65.53% relief with p<0.05 that was showing improvement. In the frequent micturation there was 41.87% relief with p<0.001 that was highly significant. For loin pain there is 63.64% relief with p>0.05 that was insignificant. For the bodyache there was 38.8% relief with p>0.05 that was insignificant.

Table 3: Sensitivity of Ashwatha Ghana.

The sensitivity showed that 10% patients are highly sensitive for Ashwatha Ghana while 60% were moderate sensitive and 6% are low sensitive for Ashwatha Ghana.

DISCUSSION

According to ancient research methodology before establishing any theory, Upayana (discussion) is the step prior to Nigamana (conclusion). Discussion is a process of re-examining one’s views and forms a base for the conclusion. In spite of detailed classical study and experimentation by various methods, theory is accepted only after the proper reasoning of observations. Hence, discussion is a very much crucial part of any scientific research. The present research work has been carried out with a view to provide a scientific basis for the claims made in various Ayurvedic texts regarding the effect of Ashwatha Ghana on Mutrakrichhra (UTI).

Ashwatha is commonly known as Peepal. Ficus religiosa (Peepal) is a Holy and Religious tree. It is a tree of life. The stem bark of Peepal is an important ingredient in many chemicals. In Charak Samhita it is mentioned in Mutrasangrahaniya Gana. It is described in many important formulations for the treatment of Mutrakrichhra.

Acharya Susruta has mentioned it in Nyagrodha Gana. In Sharangdhar Samhita it is mentioned in different formulations. The Synonyms of Peepal is given in almost all Nighantus. Fews are listed here Ashwatha, Bodhidru, Chaitavriksha, Gajabakshaka, Gajaputra, Gajashana, Guhyapushpa, Kapitana, Kesavalaya, Krishnavas, Mangalaya, Pavitraka, Mahadruma, Nagabandhu, Yajnika, Vishala, Vriksharja and many more.[8] All these synonyms
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promotes the concept of its bactericidal action or effect.

Ashwatha is a good Rejuvenator agent. It is also used in diabetes which support the fact that it may be used for urinary system too. The stem bark is used as astringent and antibacterial. The stem bark used in the anomalies of urine disorder.

Mutrakrichhra has been included under Mutradosha by Acharya Charaka. According to Charaka Mutranigraham (supression of urge of micturation) causes Mutravaha Srot Dushti. This Mutranigraham causes Pratiloma Gati of Apana Vayu and causes Oja Kshaya. All these factors lead to development of Mutrakrichhra.

Acharya Sushruta has mentioned the symptoms of suppression of Mutravega as suppression of urge of micturation leads to passage of urine with difficulty and in small quantity.

In the present study, eradication of the Mutrakrichhra is main aim, So a single drug was selected for this study, Ashwath Ghana. Most of Ayurvedic drug with the help of their properties effect on Agni and than correct the imbalance of Dosha, Dhatu, and Mala and clear Srotodusti and ultimate does Sampraptivighatan and Samprapti Vighatan is a synonym of Chikitsa. The Kashaya Rasa of Ashwatha helps to destroy the bacteria as Kashaya Rasa is mentioned as Krimighna (antimicrobial) in different texts. Ashwatha has also a Shothahara property thats why it reduces Shotha (inflammation). Ashwatha is also mentioned as Yonivisodhana. Ashwatha by its Guna, Kapha-Pitta Shamaka decreses the Pitta property of Mutrakrichhra. Sensitivity of Ashwatha shows that it has antibacterial activity.[9]

CONCLUSION

Having analysed the result on statistical parameters, we can conclude that Ashwatha is highly effective for the treatment of Mutrakrichhra (E.coli). The drug is easily available, so helpful in the treatment of Mutrakrichhra. Ashwatha positively worked on Mutrakrichhra. There was no side effect observed in patients registered and so it is free from various drug hazards.

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