EVALUATION OF THE EFFICACY OF KATABHYADI KALKA IN PAEDERUS DERMATITIS- A CLINICAL STUDY”

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Abstract: Paederus dermatitis/Blister beetle dermatitis (BBD) is a true irritant contact dermatitis of seasonal variability. It has a worldwide distribution but is mostly reported from areas with hot tropical climate usually at the onset of rain. The common species of Paederus seen in India is Paederus melampus. The contact with these insects affects the exposed site of body such as extremities, face and neck.

Beetles are nocturnal in nature and are attracted to artificial light, hence they are mostly found in densely populated places like hostels, apartments etc. Accidentally brushing or crushing the insect against the skin causes the release of its coelomic fluid, which causes a particularly irritating contact rash with symptoms of itching, burning, redness, blisters and skin lesions. These symptoms must be treated in time and therefore an effective treatment method is needed.

This beetle can be included under the groups of Keetas (insects) based on the symptoms it exhibits. In Ayurveda, Keeta Visha is described under Jangama Visha. Acharya Susruta explains 67 varieties of Keeta under 4 groups. Diagnosis and treatment of Keeta Visha according to its variety is found to be very difficult due to improper identification and regional variations. Acharya Vagbhata have classified whole of them as Vataja, Pittaja, Kaphaja and Tridoshaja and explained the general symptoms and treatments.

KATABHYADI KALKA is a yoga mentioned in Charaka Samhitha for Keeta Visha. Hence a clinical trial is planned to evaluate the efficacy of KATABHYADI KALKA in the management of Paederus dermatitis.

Index Terms - Paederus dermatitis, Keeta Visha, Paederus, Kotaabhyadi Kalka
I. INTRODUCTION

Insects are the largest group which constitute 75% of animal kingdom. As per the global burden of disease study 2013, skin disease contributed 1.79% to the global burden of disease and continue to be the 4th leading cause of non-fatal disease burden worldwide. Dermatitis is a common problem that can be seen worldwide. Paederus Dermatitis (Dermatitis Linearis or blister beetle dermatitis) a kind of true irritant contact dermatitis of seasonal variability, \cite{1,2,3} caused by a poisonous Beetles of the genus Paederus belong to the family Staphylinidae \cite{3,4}. Paederus melampus is the most prevalent species of Peaderus found in India.

Paederus dermatitis has a worldwide distribution mostly reported from areas with hot tropical climate usually before and after the rain. \cite{2–5} The exposed areas of the body, such as the extremities, face, and neck, are affected by contact with these mostly nocturnal insects. The skin issues are typically seen in the morning after waking up. \cite{5,6}

This beetle does not bite or sting but brushing or crushing the beetle over the skin release extremely vesicating polyketide cytotoxin Pederin exuded from this beetles, when they are accidentally rubbed on to the skin. Subsequently, the haemo lymph toxin Pederin penetrates the intact human skin which turns red with a burning sensation and the first clinical signs appear only about 12-24 hours.

In Ayurveda, management of all types of poisonous bites are dealt in a separate branch known as AgadaTantra which describes insect bites under Keetavisha which is an Aganthuja Ni'dana (external cause). Acharya Charaka has mentioned two type of Keetas such as Dushivisha Keetas and Pranahara Keetas. \cite{10} Acharya Susruta explains 67 varieties of Keeta under 4 groups \cite{11}. This beetle can be included under the groups of Keetas based on the symptoms it exhibits.

The text Charaka Samhitha mentioned a poly herbal compound KATABHYADI YOGA in the context of Keeta Visha with ingredients like Katabhi, Arjuna, Shirisha, Shelu and PanchaksheervrikshaTwak. \cite{9,10} It can be used in the form of Churna (Powder), Kashaya (Decoction) or Kalka (Paste) \cite{9, 10}. In present study the Katabhyadi Yoga was used in the Kalka (paste) form for the external application in the cases of Paederus dermatitis.

II. MATERIALS AND METHODS

**Drug source:** The drugs of Katabhyadi Kalka were procured from authenticated source after proper identification and authentication certificate was obtained from Dravya Guna Vijnana expert. 350gm of each drug were taken. These drugs were subjected to pulverization and made into fine powder and filtered at Alvas Pharmacy Mijar and thereafter packed into 20g packs for easy dispensing.

**Sample source:** 40 Patients were selected from OPD of Alva’s Ayurveda Medical College & Hospital, Moodbidri.
**Research design:** 40 patients, fulfilling the inclusion criteria is selected from the outpatient department of Alvas Ayurveda Medical College and Hospital Moodbidri for the study. The effect of treatment assessed based on the subjective and objective parameters.

**Method of collection:**

1. Study Design: A Randomised clinical study

2. Sample size: 40 patients suffering from Paederus dermatitis fulfilling the inclusion criteria of either sex were selected for the study.

3. Selection criteria: The cases were selected as per signs and symptoms of Paederus dermatitis.

**Diagnostic criteria:** 40 patients were selected and studied. This includes cases with specific diagnosis of blister beetle contact based on the symptoms were taken for the study.

**Table no: 1 Keeta Visha Lakshanas**

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>2. Daha – Burning sensation</td>
<td>6. Pitaka – Blisters and kissing type of lesions (if any)</td>
</tr>
<tr>
<td>4. Kandu – Itching</td>
<td></td>
</tr>
</tbody>
</table>

**Inclusion criteria**

1. Patients presenting with the symptoms of beetle contact were selected.

2. Persons of either sex, all ages, races or socio economic conditions were selected.

**Exclusion criteria**

1. Patients with history of systemic and metabolic disorders like DM etc.

2. Patient with previous history of chronic skin disease and allergy.
III. PROCEDURE OF ADMINISTRATION OF DRUGS

The *Katabhyadi Kalka* [9] is applied over the affected part of the patient three times a day up to 3 days and washed off before drying. As per the classics it is mentioned that *Vishagna Lepa* should be applied 1/3rd thickness (0.587cms)

Observation period and follow up: After 24 hours, daily up to 3 days

Follow up: 7 days after the treatment

**Assessment criteria:** Selected patients were thoroughly examined subjectively and objectively. Detailed history and physical findings were noted. Improvement was documented and assessed through statistical method.

After administering the trial drug, assessment was done after 24 hours in comparison with the 1st visit based on specially prepared scoring patterns. Overall assessment were done based on the reduction in the number of symptoms / severity of the symptoms.

**Statistical analysis:** In this study for statistical analysis of the parameters were assessed by using Wilcoxon signed rank test and S.D, S.E and ‘P’ values were calculate according to it.

**Ethical clearance:** Clearance has been obtained from the ethical committee constituted in the institution.

IV. ASSESSMENT OF OVERALL EFFECT OF THERAPY

**Table 2: Assessment of overall effect of therapy**

<table>
<thead>
<tr>
<th>Percentage of cure</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>76-100%</td>
<td>Marked Improvement</td>
</tr>
<tr>
<td>51-75%</td>
<td>Moderate Improvement</td>
</tr>
<tr>
<td>26-50%</td>
<td>Mild Improvement</td>
</tr>
<tr>
<td>0-25%</td>
<td>No Improvement</td>
</tr>
</tbody>
</table>

V. RESULTS

**Table no 3: Overall assessment of the treatment**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Mean</th>
<th>M.D</th>
<th>% of relief</th>
<th>P value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT</td>
<td>AT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raga</td>
<td>2.6</td>
<td>0.075</td>
<td>0.138</td>
<td>97.11%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Ruja</td>
<td>2.27</td>
<td>0.05</td>
<td>0.095</td>
<td>97.8%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Daha</td>
<td>2.05</td>
<td>0.1</td>
<td>0.18</td>
<td>95.1%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Pitika</td>
<td>1.4</td>
<td>0.4</td>
<td>0.07</td>
<td>67.5%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Kandu</td>
<td>0.87</td>
<td>0.075</td>
<td>0.138</td>
<td>91.5%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sopha</td>
<td>1.2</td>
<td>0</td>
<td>0</td>
<td>100%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Srava</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
<td>100%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
VI. DISCUSSION

1. Discussion on clinical study

The diagnostic criteria’s selected for this study were Ruja, Raga, Daha, Kandu, Pitika, Sopha and Srava. All these symptoms were tried to compute by using appropriate grading scale. Keeta Visha Lakshana also mentions the presence of these symptoms. Paederus Dermatitis having similar symptoms and in the present study these symptoms are evidently seen.

40 patients were selected for the study who were diagnosed with Paederus dermatitis based on the history and symptoms assessed using appropriate grading criteria.

Out of which all the 40 (100%) patients had Ruja, Kandu, Pitika, Raga, 87.5% had Sopha, 25% had Srava and 95% had Daha.

The development of these symptoms is caused by a vesicular substance found in Paederus termed paederin, which is present in the insect. The vesicant is released when the beetles are accidentally crushed on the skin, causing irritat contact dermatitis.

2. Discussion regarding Katabhyadi Kalka

Agadas used for treating insect poisoning (Keeta Visha) should have Vishahara and Pittakaphahara properties. So that the drugs of Katabhyadi Kalka shows the properties like Kapha Pitta Shamaka and Tridoshahara, Vishaghna, Kandughna, Vranahara and Twak Doshahara.PD (Keeta) vitiate all the three Doshas but predominantly Pitta and Kapha. By this properties Katabhyadi Kalka can be considered as effective against Paederus dermatitis

3. Discussion on Results

The effect of treatment was assessed by Wilcoxon Signed rank test.

- **Raga**: The effect of Katabhaydi Kalka in Raga shows significant result and 97.1% improvement in the whole symptoms. The drugs poses Pittahara action by both its Rasa and Virya. Raga is mainly due to the Pittaparakopa. Sheeta Virya drugs will actas Pittaprashamana.
• **Pitaka**: Effect on Pitaka is 67.7% improvement and shows statistically significant. Because of the Thikta and Kashaya Rasa, Vishaghna, Srothoshodhana and Twakdoshahara properties of the drugs which does the Kapha Vata Shamana gives abetter effect in Pitaka.

• **Daha**: 95.1% relief and significant. Nyagrogha, Udumbara are Dahaprasamana in nature.

• **Ruja**: The effect on Ruja is 97.8% improvement and significant result was observed. Katabhyadi Kalka Lepa when applied create Vibanda in the Srotas thus not allowingthe further spread of Visha. Hence Ruja caused due to the intensity of Visha is reduced. Panchaskeeri Vriksha has Aashupeedahara hence act in Ruja. Shirisha had Vedanasthapana action.

  - **Shopha** shows 100% improvement and shows significant statistically. The drugs of the formulation are considered as Shothahara. Due to the properties of drug the Kapha is eliminated and hence Sotha is reduced.

  - **Kandu**: shows 91.4% improvement and significant statistically. Shirisha, Parisha had Kandugna property.

  - **Srava**: shows 100% improvement and shows significant statistically. The drugs have Peedana, Ropana and Sodhana property. The drugs of Katabhyadi Kalka having Panchaksheri Vriksha having Grahi and Stambhana property hence act in Srava. The Stambhana effect is due to the Sheeta Virya Dravya present in the formulations.

    The drugs of Katabhyadi Kalka having 9 drugs out of which 7 are Sheeta Virya in nature and poses Vishna, Vranaropna, Kandugna, Twakdoshahara, Kapha Pitta Shamaka, and Tridoshahara.

**VII. PROBABLE MODE OF ACTION OF KATABHAYADI KALKA**

Lepa (Vishaghna) is one of the important Bahiparimarjana Chikitsa (external therapies), which subsides vitiated Doshas. Most of the Vishaghna Lepas (antitoxic applications) are Tridoshahara mainly Pittahara (Brajaka Pitta is situated in Twacha) and due to Ashraya Aashrayibhava they removes vitiated Doshas from the Raktha and act as Vishaghna. All Vishaghna Lepas due to their Guna and Veerya act as Doshaghna Lepa. Lepa helps to remain in the site properly allowing its potency to enter the Swedavahini srotas through the Romakoopas making the action of the application quick and effective. Paederus dermatitis (Keeta) vitiate all the three Doshas but predominantly Pitta and Kapha.

Katabhyadi Kalka having 9 drugs which shows the properties like Kapha Pitta Shamaka and Tridoshahara, Vishaghna, Kandugna, Vranahara and Twak Doshahara. The drugs like Arjuna, Shelu and Panchaksheeri Vriksha possess Sheetha Veerya, might be antagonizing the Ushna and Theekshna effect of Visha. Some of the drugs of this Yoga are individually Vishaghna and in combination of drugs would bring about impressive effects. Paederus dermatitis (Keeta) vitiate all the three Doshas but predominantly Pitta and Kapha.
**Katabhyadi kalka** contain carbohydrates, resin, steroids, proteins, starch and tannins works by decreasing inflammation and helps in lowering the tissue damage, anti-microbial, disinfectant, antioxidants, antiseptic and toning properties.

Water was used as medium for application of *Lepa*, which has the properties of *Sheetha Veerya*, cures burning sensation, disorders of *Pitta, Rakta*. Thus, the combination of *Katabhyadi Kalka* with water is found to be effective in the present study.

**VIII. CONCLUSION**

Insect bite reactions are commonly seen in clinical practice. Paederus dermatitis is a common condition with a high level of public awareness and suspicion.

- The unintentional brushing of female insect against the skin usually at night release its coelomic fluid causing a peculiar irritant contact dermatitis with symptoms like itching, burning sensation, redness etc common in the exposed areas like face and other extremities.
- *Keeta visha* has been mentioned from Vedic period till date and have significant role in the manifestation of *Visha*. The treatment modalities are mentioned by our *Acharyas* and the ancient *Visha Vaidyas* which are cost effective and easily available.
- Hence a *Yoga* is selected from *Charaka Chiktsa Sthana* which is fulfilling the above characteristics was studied and the results were analysed.
- The drugs of *Katabhyadi Kalka* possess *Vishgna, Vranaropna, Kandugna, Twakdosahara, Kapha Pitta Shamaka, and Tridosahara* properties counteract the symptoms caused due to PD.
- While analysing the result statistically, significant result with (P<0.001) in relieving *Ruja, Daha, Kandu, Sopha, Srava, Pitaka and Raga* were observed.

**IX. REFERENCES**


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X. INSECT-PAEDERUS/ACID FLY/BLISTER BEETLE

BEFORE AND AFTER TREATMENT

Fig 1