Clinical Research

A clinical study on Krimidanta with reference to dental caries and its management with Jatipatradi Gutika and Yavanadi Churna

Makbul Mansuri, Manjusha Rajagopala, Narayan Bavalatti
Department of Shalakya Tantra, I.P.G.T. and R.A., Gujarat Ayurved University, Jamnagar, Gujarat

Abstract

Dental caries is progressive destruction of enamel, dentine and cementum, initiated by microbial activity at the tooth surface. It is one of the major problems in dentistry. On the basis of clinical features, it can be compared with Krimidanta which is one among the eight diseases of tooth. In the management of Krimidanta, Krimighna, Vataghna and Ushna Veerya dravyas are to be used which can relieve the toothache and discoloration. In this study, the trial drugs used were Jatipatradi Gutika for Pratisarana and Yavanadi Churna for oral administration. In this study, the patients of Krimidanta (dental caries) were selected from OPD of Shalakya Department and allotted randomly in different groups. In Group A, the patients were treated with Jatipatradi Gutika for Pratisarana for 30 days. In Group B, the patients were treated with Yavanadi Churna orally and Group C patients were treated with combined therapy for 30 days. The clinical study has shown that combined therapy gives better results than individual therapies.

Key words: Dental caries, Jatipatradi Gutika, Krimidanta, Pratisarana, Yavanadi Churna

Introduction

Teeth are very precious organs of the body, governing lot of functions like chewing, speech control, giving shape to the mouth and the most important of all is to maintain the beauty of the face; once they are destroyed, they cannot regrow.[1] Eight Danta Rogas are described by Acharya Sushruta; of them, Krimidanta is the one which gradually results in tooth loss, if not treated in time. Krimidanta is characterized by black discoloration, cavity formation, swelling, pus and blood oozing and severe pain.[2] It occurs due to vitiation of Vata followed by Pitta and Kapha Dosha.

Dental caries often leads to fatal infection and may lead to death, if the patients do not take proper treatment.[3] Oral infections in patients with rheumatic or congenital heart diseases are particularly dangerous, as they can lead to the risk of infective endocarditis.[4]

Knutson’s technique is widely recommended for topical application of sodium fluoride to the teeth. The effectiveness of topical fluoride administration is questioned.[5] An operative procedure such as filling and R.C.T. techniques have their own limitations. As per the World Health Organization (WHO) technical report 1995, 19 billion individuals per year are affected by dental caries; thus, this disease poses a challenge to the dentists. All these facts leave a scope to search a better remedy to the problem.

In Ayurvedic texts, a good number of medicaments are explained for strengthening the teeth and gums. These remedies are made from various plants and applied to the gums and tooth in the form of powders, oils, etc. In addition to this, bloodletting is also described in classics. In the management of Krimidanta, the drugs having Krimighna (antimicrobial), Vranaghna and Ushna Veerya are to be used which can relieve the toothache and Krimi. In the present study, the trial drugs used were Jatipatradi Gutika for Pratisarana and Yavanadi Churna (Bhaishajya Ratnavali 61/99, 30/11)[6] for oral administration.

Aims and objectives

The present study was based on following aims and objectives.
1. To study the etiopathogenesis of Krimidanta (dental caries) from Ayurvedic and modern points of view.
2. To evaluate the efficacy of Jatipatradi Gutika and Yavanadi Churna in signs and symptoms of Krimidanta (dental caries).

Materials and Methods

Source of data

In the clinical trial of Krimidanta (dental caries), the patients were selected from OPD and IPD of Shalakya Tantra department, IPGT and RA hospital, Jamnagar and were
randomly assigned into three groups, viz., Groups A, B and C. A total of 40 patients were registered and randomly distributed in three groups, comprising 14 patients each in Groups A and C and 12 patients in Group B.

Inclusion criteria
The patients were diagnosed on the basis of the signs and symptoms of *Krimidanta* (dental caries) and these patients were included in the clinical study.

Exclusion criteria
Patients with the following were excluded:
- age below 10 years and above 60 years,
- fractured tooth,
- patients with periodontal abscess and
- patients with other diseases of oral cavity.

Ethical clearance
The study was cleared by the ethical committee of the institute. Written consent was taken from each patient willing to participate, before the start of the study. For those patients who were unable to read or write, consent of their relatives was taken. Patients were free to withdraw their names from the study at any time without giving any reason.

**Jatipatradi Gutika and Yavanadi Churna preparation**
“Jatipatradi Gutika” and “Yavanadi Churna” were prepared according to the standard method of preparation of *Gutika* and *Churna*, respectively, in the pharmacy of Gujarat Ayurved University. The Ingredients of *Jatipatradi Gutika* are *Jatipatr* (*Jasminum grandiflorum*), *Ajamoda* (*Carum Roxburghianum*), *Shanthis* (*Zingiber officinale*), *Punarnava* (*Boerhavia diffusa*), *Musta* (*Cyprus rotundas*), *Haradaki* (*Terminalia Chebula*), *Jhantiatr* (*Barleria prionitis*), *Vacha* (*Acorus calamus*), and *Tila* (*Sesamum indicum*). Yavanadi Churna consists of five drugs, viz., *Yavani* (*Trachyspermum ammi*), *Haradaki* (*T. Chebula*), *Hinga* (*Ferula Foetida*), *Saindhava* (*sodi chloride impura*) and *Sauvarchala* (*Unaqua sodium*).

Assessment criteria
An assessment was made on the basis of change in clinical features before and after treatment and scoring was given to each symptom with scores ranging from 0 to 3.

The details of the drugs and their administration and duration are given in Table 1.

Follow-up
A minimum period of 2 months was kept for follow-up study.

Statistical test
The obtained data on the basis of observations were subjected to statistical analysis in terms of mean, standard deviation and standard error, and “t” test was used to calculate statistical significance. *P* < 0.001 was considered as highly significant, *P* < 0.05 or *P* < 0.01 as significant, and *P* < 0.10 or *P* > 0.01 as insignificant.

**Observations and Results**

The maximum number of the patients, i.e., 32.43% reported in the age group of 41–50 years. Majority of the patients (64.86%) were females. Also, 51.36% of the patients were house wives, and majority of the patients (45.95%) belonged to middle class. 100% patients were having complaint of *Chidrata*, and *Krishnata* was present in 97.30% patients. *Dantashoola* was present in 94.59% patients and 89.19% patients were reported to have *Dantaharsha*. *Daaurangi* was reported in 70.27% patients and *Aniyamit Ruja* was found in 54.05% patients. Three-fourths of the patients, i.e., 75.68% were using brush to maintain oral hygiene and the remaining patients were using finger for oral hygiene; more than three-fourths of the patients were using horizontal method while 18.92% patients were using vertical method for tooth brushing. Also, 65.57% patients were using tooth paste as the cleaning material and 24.32% were using tooth powder, and only 8.11% patients were using *Datun*. It was also observed that 70.27% of patients were vegetarians, 43.24% patients were of *Vata Pitta Prakriti*, 75.68% of patients were having *Madhyaama Sambhanama* and 51.35% patients were having *Samagni*, followed by 29.73% patients having *mandagni*, 10.81% having *Tikshnagni* and 8.11% were having *Vishamagni*. All the patients (100%) were having carious teeth.

In Group A, out of 13 patients, none was cured, 07.69% (one patient) showed marked improvement, 61.54% (eight patients) showed moderate improvement, and 30.77% (three patients) showed mild improvement. Statistically highly significant relief was obtained in *Dantaharsha*, *Aniyamit Ruja* and *Daaurangi*. Clinically marked improvement in *Srava* and moderate improvement in *Shotha* and *Paka* were obtained [Table 2].

In Group B, out of 11 patients, none was cured and showed marked improvement [Figure 1]. Only 9.09% (1 patient) showed moderate improvement and 90.91% (10 patients) showed mild improvement. Statistically highly significant relief was obtained in the symptoms *Dantashoola*, *Daaurangi* and *Dantaharsha*, and significant relief was obtained in *Aniyamit Ruja* [Table 3].

In Group C, out of 13 patients, none was cured and 7.69% (one patient) of the patients showed marked improvement. Also, 69.23% (nine patients) showed moderate improvement and 30.77% (three patients) showed mild improvement [Figure 1]. On statistical analysis, highly significant results were obtained in *Dantashoola*, *Daaurangi*, *Dantaharsha*, and *Aniyamit Ruja*, whereas significant results were obtained in *Shotha*, and the result was insignificant in *Chidrata*, *Krishnata*, *Paka* and *Srava* [Table 4].

**Discussion**

*Krimidanta* (dental caries) is very common all over the world.
and involves all the age groups due to bad oral hygiene, lack of awareness about proper oral hygienic measures and bad habits like chewing tobacco, smoking, etc. Krimidanta is silently progressive in nature. Generally, the disease Krimidanta is neglected by the patients till the pathogenesis become irreversible. It is observed that patients are worried of the time consuming and lengthy treatment like scaling, filling, root canal treatment and consulting the dentist regularly. Improper management in early stage leads the disease to the chronic phase. Dental caries is a problem related to the improper oral care; if at an early stage, the condition is neglected by the patients, the disease finally results in tooth loss. Dental caries affects mostly the population between the ages of 14 and 20 years, during which decay activity is the highest. Though many theories are put forth to understand the exact mechanisms of caries formation, still the exact mechanism is not known. Dental caries is a microbial disease of the calcified tissues of the teeth, characterized by decalcification of the inorganic portion and destruction of the organic substances of the tooth.

Table 2: Effect on signs and symptoms (Group A)

| Chief complaints | Mean score | Relief | SD | SE | t  | P       |
|------------------|------------|--------|----|----|----|---------|
|                  | BT         | AT     |    |    |    |         |
| Dantashoola      | 2.00       | 0.46   | 76.92 | 0.66 | 0.18 | 8.40 | <0.001 |
| Shotha           | 2.17       | 0.66   | 69.23 | 0.84 | 0.34 | 4.39 | <0.01  |
| Chidrata         | 2.15       | 2.15   | 0.00 | 0.00 | 0.00 | 0.00 | >0.05  |
| Daurgandhya      | 2.30       | 0.40   | 82.61 | 0.32 | 0.10 | 19.0 | <0.001 |
| Krishnata        | 2.16       | 2.00   | 07.69 | 0.39 | 0.11 | 1.48 | >0.05  |
| Chaladanta       | 2.00       | 1.33   | 33.33 | 0.58 | 0.33 | 2.00 | >0.05  |
| Dantaharsha      | 2.41       | 0.33   | 86.21 | 0.29 | 0.08 | 25.0 | >0.001 |
| Srava            | 1.66       | 0.33   | 80.00 | 0.58 | 0.33 | 4.00 | >0.05  |
| Paka             | 2.00       | 0.66   | 66.67 | 0.57 | 0.33 | 4.00 | >0.05  |
| Aniyamit Ruja    | 2.12       | 0.37   | 82.35 | 0.46 | 0.16 | 10.69 | <0.001 |

Table 3: Effect on signs and symptoms (Group B)

| Chief complaints | Mean score | Relief | SD | SE | t  | P       |
|------------------|------------|--------|----|----|----|---------|
|                  | BT         | AT     |    |    |    |         |
| Dantashoola      | 2.50       | 0.80   | 68.00 | 0.48 | 0.15 | 11.129 | <0.001 |
| Shotha           | 3.00       | 1.50   | 50.00 | 0.71 | 0.50 | 1.00 | >0.05  |
| Chidrata         | 2.36       | 2.36   | 00.00 | 0.00 | 0.00 | 0.00 | >0.05  |
| Daurgandhya      | 2.37       | 0.87   | 63.16 | 0.53 | 0.19 | 7.94 | <0.001 |
| Krishnata        | 2.18       | 2.00   | 08.33 | 0.40 | 0.12 | 1.49 | >0.05  |
| Chaladanta       | 2.50       | 2.00   | 20.00 | 0.71 | 0.50 | 1.00 | >0.05  |
| Dantaharsha      | 2.36       | 0.82   | 65.38 | 0.52 | 0.16 | 9.81 | <0.001 |
| Srava            | 2.00       | 1.50   | 25.00 | 0.71 | 0.50 | 1.00 | >0.05  |
| Paka             | 2.00       | 1.50   | 25.00 | 0.71 | 0.50 | 1.00 | >0.05  |
| Aniyamit Ruja    | 2.25       | 0.50   | 77.78 | 0.50 | 0.25 | 7.00 | <0.01  |

Table 4: Effect on signs and symptoms (Group C)

| Chief complaints | Mean score | Relief | SD | SE | t  | P       |
|------------------|------------|--------|----|----|----|---------|
|                  | BT         | AT     |    |    |    |         |
| Dantashoola      | 2.58       | 0.58   | 77.42 | 0.43 | 0.12 | <0.001 | 16.25 |
| Shotha           | 2.25       | 0.50   | 77.78 | 0.50 | 0.25 | <0.01  | 7.00  |
| Chidrata         | 2.38       | 2.38   | 00.00 | 0.00 | 0.00 | >0.05  | 0.00  |
| Daurgandhya      | 2.37       | 0.25   | 89.47 | 0.35 | 0.12 | <0.001 | 17.0  |
| Krishnata        | 1.92       | 1.61   | 16.00 | 0.48 | 0.13 | <0.05  | 2.34  |
| Chaladanta       | 1.50       | 1.00   | 33.33 | 0.71 | 0.50 | >1.00  | 1.00  |
| Dantaharsha      | 2.40       | 0.20   | 91.67 | 0.42 | 0.13 | <0.001 | 16.5  |
| Srava            | 2.50       | 0.50   | 80.00 | 1.40 | 1.00 | >0.05  | 2.00  |
| Paka             | 2.50       | 0.50   | 80.00 | 1.41 | 1.00 | >0.05  | 2.00  |
| Aniyamit Ruja    | 2.25       | 0.25   | 88.89 | 0.53 | 0.19 | <0.001 | 10.58 |
manifest due to vitiation of Agni. Hence, to prevent and manage the disease, its root cause should be treated, i.e., Agni. The ingredients of Yavanadi Churna, in addition to other properties, also have the Agni deepana and Amapachana properties; so, it may cure the root cause of dental caries. Hence, the oral medication was selected in this study.

On reviewing the literature related to the properties of the drug Yavanadi Churna, it is seen to be having predominantly Katu, Tikta Rasa, Laghu, Raksha Gunas, Ushna Veerya and Katu Vipaka. The constituents of Yavanadi Churna comprise Katu Rasa (39%), Tikta Rasa (26%) and Madhura Rasa (26%). Katu Rasa acts as a Shodhana, Lekhana. Kledoshoshaka, Varnashamaka, Krimighna and Kap Hannahaka.

Mostly, Laghu Guna (50%) and Raksha (20%) Gunas are found in Yavanadi Churna. Laghu–Raksha Gunas are Kapha Shamaka. These Doshas play an important role in the causation of Krimidanta. This drug is mostly (80%) Ushna Veerya. Ushna Veerya exhibits Vata-Kapha Shamaka activity. Vipaka was detected as Katu (80%) which probably normalizes vitiated Kapha and Vata. Hence, the drug may be effective in treating the disease Krimidanta.

**Conclusion**

From the results and observations of this study, it can be concluded that Jatipatradi Gutika has provided better results in Dantashoola, Daurgandhya, Dantaharsha, Aniyamit Ruja, Shotha and Paka in Krimidanta Roga. Yavanadi Churna has provided good results in Dantashoola, Aniyamit Ruja, Dantaharsha and Daurgandhya. No result has been obtained in Chidrata (cavity formation), Krishnata (discoloration), Shotha (swelling), Paka (discharge) and Chaladanta (mobility) in this group. In a nutshell, the present clinical study has established that combined therapy gives better results than individual therapies.

**Acknowledgments**

The author would like to express my sincere thanks to Dr. Manjusha Rajagopala, M.D. (Ayu), Ph.D., who guided me on this work, for her constant support and innovative suggestions, without which this would not have been possible. The author also grateful to authorities and members of research committee of I.P.G.T and RA for providing me the available facilities for conducting this work. Lastly, The author acknowledge all the patients for their willingness and full cooperation given during the study.

**References**

1. Marzouk MA, Simonton AL, Gross RD. Operative Dentistry- Modern Theory and Practice. 1st Indian ed. 1997.
2. Sushruta Samhita Text with English translation by Kaviraj Kunjalal Bhishagratna. Varanasi: Chaukhamba Sanskrit Series office; 2003. p. 121, 122 Su Ni 16/29.
3. Theodore M. Roberson -Student’s Operative Dentistry. 4th ed. All India Publishers & Distributors Regd. Medical Publishers, Chennai (Madras India)
4. Rowe AH, Alexander AG, Johns RB. A comprehensive guide to clinical dentistry. London: Class publishing; 2002. Mosby- A Harcourt Health Sciences Company St. Louis, London.
5. Bhaishajya Ratnavali- by Govinda Das, Vidhyotini Hindi Vyakhya by Ambikadatta Shastri. 5th ed. Varanasi: Chaukhamba Orientalia, Varanasi 60/99, 30/1.
6. Bhavapraksha Nighantu of Shri Bhavamishra, Commentary by Dr. K. C. Chunekar: Chaukhambha Bharati Academy, 2002. p. 13, 14, 249, 491.
7. Dravyaguna vijnana by Prof. Gyanendra Pandey, Vol. 1. Varanasi: Chaukhambha Krishnadas Academy; 2002. p. 84,749, 841.
8. Charbenea GT. Principal and practice of operative dentistry. 3rd ed. Bombay: Varghese Publishing house; 1988.
9. Bhaskar SN. Orbis’ Oral Histology and Embryology. 10th ed. Delhi: CBS Publication; 1990.
10. Tripathi B. Astanga Hrudayam of Srimadavaghbata. Delhi: Chaukhambha Sanskrit Pratishathan; 2007. p. 512, As Hr Ni 12/1.

हिंदी सारांश

जातिप्प्रजादि गुटिका और यवानादि चूर्ण द्वारा कृमिदंता - डेंटल केरोज पर चिकित्सकीय अध्ययन

मक्कूल मन्सूरी, मंजू राजगोपाल, नारायण बाबूलाल

डेंटल केरोज दंत सतह पर सुक्ष्म जीवियों द्वारा प्रभावित इन्मेल, डेंटिन एवं सीमेंटम का क्रमिक क्षय है। यह दंत चिकित्सा के क्षेत्र में विकसित समस्या है। चिकित्सकीय लक्षणों के आधार पर इसकी तुलना कृमिदंत से कर सकते हैं, जो दंत की आठ व्याधियों में से एक है। कृमिदंत की चिकित्सा में कृमिधा, ब्रान्ध और उप बीम द्रुत्तों का प्रयोग करते हैं, जिससे दंतस्थल और दंतवृत्तियम में लाभ मिलता है। इस अध्ययन में प्रतिसारण के लिए जातिप्रजादि गुटिका और मुख्य द्वारा सेवन के लिए यवानादि चूर्ण का प्रयोग किया गया। इस अध्ययन में शालक्य तंत्र विभाग के वैहिन विभाग में आने वाले रूग्नों में से कृमिदंत - डेंटल केरोज से पीड़ित रूग्न पत्ताकृत किए गए। समूह ‘‘अ’’ के रूग्नों की चिकित्सा जातिप्रजादि गुटिका - प्रतिसारणार्थ 30 दिनों तक की गई। समूह ‘‘ब’’ के रूग्नों की चिकित्सा यवानादि चूर्ण द्वारा की गई एवं समूह ‘‘स’’ के रूग्नों को दोनों तरह की चिकित्सा 30 दिनों तक दी गई। चिकित्सकीय अध्ययन में युग्म चिकित्सा द्वारा एकल चिकित्सा से अच्छे परिणाम प्राप्त हुए।