

ROLE OF GANDHAKA DRUTI PAINT IN TONSILLITIS: A CLINICAL STUDY**Dr. Ajit Dahatonde¹, Dr. Amol Patil², Dr. M. B. Patil³, Dr. Jagdish Patil⁴ and Dr. Janardhan K.⁵**¹Assist Prof. Dept. of Kaumarabhritya, Shri Dhanvantary Ayurvedic Medical College, Mathura U.P., India.²HOD and Assist Prof., Dept. of Kaumarabhritya, Shri Gurudeo Ayurvedic College, Mozari Amravati, Maharashtra, India.³HOD and Prof. Dept. of Rognidan & Vikruti Vidnyana, Shri Gurudeo Ayurvedic College, Mozari, Amravati, Maharashtra, India.⁴HOD and Assist Prof., Dept. of Panchakarma, Shri Gurudeo Ayurvedic College, Mozari Amravati, Maharashtra, India.⁵Assist Prof., Dept. of Kaumarabhritya, Sri Adi Siva Sadguru Ali Shaeb Sivvaraula Ayurvedic Medical College, Guntakal Dist., Anantapur, A.P., India.***Corresponding Author: Dr. Ajit Dahatonde**

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ABSTRACT

Tonsillitis is one of the major common problems amongst the children Ayurveda described Tundikeri which resembles tonsillitis. Ayurveda mentioned various therapeutic approaches for disease management such as Gandhaka Druti application over inflamed tonsils. This article attempts an effort to explore principles and practices of Gandhaka Druti and article also aimed to highlights such traditional techniques correspondence to the modern research methodology. Study selects patients of tonsillitis between age group of 2 to 16 years. Patients were given Gandhaka Druti paint as single group. The efficacy of the therapy was assessed with the help of parameters such as; inflammations, throat pain, fever, swallowing difficulty and cough. Pre and post treatment along with photograph and throat swab culture was also done to observe the local effect of therapy against infecting organism. The efficacy of present study suggested promising results which was found to be statistically significant. The article finally concluded that the Gandhaka Druti application over inflamed tonsils may offer significant relief in Tonsillitis.

KEYWORDS: Ayurveda, Tonsillitis, Tundikeri, Gandhaka Druti.**INTRODUCTION**

The infectious diseases are most common prevalence amongst the other disease especially in children & upper respiratory tract infections is one of them. The upper respiratory tract infections may results inflammation on tonsils called tonsillitis. The frequent prevalence of such type of infections of tonsils affects school performance of children.^[1] Ayurveda described Tundikeri which resembles tonsillitis.^[2] The ancient Acharyas mentioned many drugs alone or in combination to treat Tundikeri. Ayurveda also mentioned various Pralepa to treat inflammation; Gandhaka Druti is one of them used over inflamed tonsils.^[3,4] The present investigation attempts an effort to prove efficacy of Gandhaka Druti in tonsillitis. The results of study offer suggest statistically significant potency of Gandhaka Druti in tonsillitis.

MATERIAL AND METHODS

1. Raw Gandhaka was collected from the market then purified.^[5]
2. Gandhaka Druti was prepared under the guidance of

Rasasashtra Department.^[6]

3. 30 Patients of tonsillitis were selected randomly from OPD and IPD of Shri Venkateshwara Ayurveda hospital after proper consideration of inclusion and exclusion criteria.

Inclusion Criteria

- Age group of 2 to 16 years.
- Patient possessed symptoms of Tonsillitis.
- Patient wished to participate in study as part of treatment.
- Patients of either sex.

Exclusion Criteria

- Tonsillitis with complications such as; Quincy, Laryngeal edema and Abscess.
- Age group below 2 yrs and greater than 16 yrs.
- Other conditions which mimic tonsillitis e.g. Diphtheria, Herpes and Vincent's angina.

Treatment protocol

After written consent obtained from guardian of patient

and through history and examination patients were asked to open the wide mouth, tongue depressor used to depress the tongue, if required. Lepa (painting) of tonsils were done with Gandhaka Druti using sterile probe with cotton wrapped to its one end or with ear bud separate one for each tonsil under the bright light source. Patient was advised not to take food one hour before and after the application of drug.

- Above procedure repeated every day for 7 days.
- On day 0 and day 8 throat swab was sent for culture under strict aseptic precaution.
- Pre and post treatment photograph were also taken.

Results were assessed using the assessment criteria mentioned below

Assessment Criteria

- 1) Fever
- 2) Throat Pain
- 3) Difficulty in Swallowing
- 4) Tonsillar Inflammation
- 5) Cough
- 6) Throat Swab Culture
- 7) Pre and post treatment Photograph

OBSERVATION AND RESULTS

30 patients of Tonsillitis were registered for planned clinical study. They were given Gandhaka Druti as single group. The age, sex, religion, socio-economic status, dietetics etc. were observed as follow:

Age:-The majority of patients were from 7 to 11 years of age i.e. 46.66% followed by 2 to 6 years of age i.e. 40%.

Sex:-The numbers of female patients were 63.33% and the male patients were 36.66%.

Dominant Ahar Rasa:- The maximum number of patient i.e. 66.66% were taking Amla Rasa dominant Ahara, 23.33% Madhur Rasa dominant Ahara, 6.66% Lavana Rasa dominant Ahara and 3.33% patients were taking Ahara with Katu Rasa dominancy.

Addiction status:- The data indicates that maximum number of patients i.e. 86.66% were addicted to chocolate, whereas 56.66% of the patients were addicted to ice-cream, 40% were addicted to cold drink and 30% were taking junk food regularly.

Diet:- The diet pattern showed that most of the patients i.e. 73.33% were mix vegetarians and 26.66% patients were pure vegetarian.

Habitat:- The 73.33% of patients were from urban habitat and 26.66% belongs to rural habitat.

Type of Tonsillitis:- It depicts that most of the patients i.e. 90% belongs to chronic Tonsillitis while 10% belongs to acute Tonsillitis.

Effect on symptoms of 30 patients of Tonsillitis by Wilcoxon Matched-Pairs-Signed-Ranks Test

- 1) **Fever:** Sum of all signed ranks was 378. The numbers of pairs were 27. Z value was 4.54, which was statistically very significant, $P < 0.0001$. (Table 1).
- 2) **Inflammation:** Sum of all signed ranks was 435. The numbers of pairs were 29. Z value was 4.70, which was statistically very significant, $p < 0.0001$. (Table 1).
- 3) **Odynophagia:** Sum of all signed ranks was 351. The numbers of pairs were 26. Z value was 4.45, which was statistically very significant, $p < 0.0001$. (Table 1).
- 4) **Throat Pain:** Sum of all signed ranks was 435, the number of pairs were 29. Z value was 4.70, which was statistically very significant, $p < 0.0001$. (Table 1).
- 5) **Cough:** Sum of all signed ranks was 300. The numbers of pairs were 24. Z value was 4.28, which was statistically very significant, $p < 0.001$. (Table 1).

Table 1: Effect on symptoms of 30 patients of Tonsillitis by Wilcoxon Matched-Pairs-Signed-Ranks Test.

Sr. No	Symptom	Mean	SD	S Ed	Sum of All Signed Ranks	No of Pairs	Z	P
1	Fever				378	27	4.54	<0.0001
	BT	1.5670	0.8172	0.1492				
	AT	0.2000	0.4068	0.07428				
	Diff.	1.3670	0.7184	0.1312				
2	Inflammation				435	29	4.70	<0.0001
	BT	2.267	0.5833	0.1065				
	AT	0.6333	0.7184	0.1312				
	Diff.	1.633	0.6687	0.1221				
3	Odynophagia				351	26	4.45	<0.0001
	BT	2.400	0.5632	0.1028				
	AT	1.033	0.7184	0.1312				
	Diff.	1.367	0.85033	0.1552				
4	Throat Pain				435	29	4.70	<0.0001
	BT	1.967	0.6149	0.1123				
	AT	0.8333	0.5921	0.1081				
	Diff.	1.133	0.4342	0.07927				
5	Cough				300	24	4.28	<0.0001
	BT	1.467	0.9371	0.1711				
	AT	0.4000	0.5632	0.1028				
	Diff.	1.067	0.7397	0.1350				

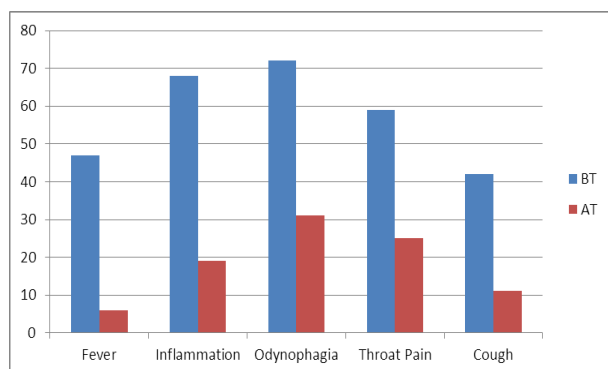
Effect of Therapy on Symptoms score

It was observed that overall percentage of relief was 68.06%. Effect on fever, inflammation, odynophagia, throat pain and cough was 87.23%, 72.06%, 56.94%,

57.62% and 73.81% respectively. (Table 2) Thus it can be concluded that the effect of drug on Odynophagia & Throat Pain is very low as compare to other symptoms.

Table 2: Effect of Therapy on Symptoms score of 30 Patients of Tonsillitis.

Sr. No	Symptom	B.T	A.T	Difference	% of Relief
1	Fever	47	6	41	87.2340
2	Inflammation	68	19	49	72.0588
3	Odynophagia	72	31	41	56.9444
4	Throat pain	59	25	34	57.6271
5	Cough	42	11	31	73.8095
	Average Score	288	92	196	68.0555%

**Figure 1: Effect of Therapy on Symptoms score of 30 Patients of Tonsillitis.****Total effect of therapy in 30 patients of Tonsillitis**

Out of total 30 patients, 3 patients (10%) were cured completely, 7 patients (23.33%) were observed marked relief and 15 patients (50%) were acquired moderate

relief & 5 patients (16.66%) were observed mild relief (Table 3).

Table 3: Total effect of therapy in 30 patients of "Tonsillitis".

Sr. No.	Total effect of therapy	Total	
		No. of patients	%
1	Cured (100% relief)	3	10%
2	Marked relief (>75% relief)	7	23.33%
3	Moderate relief (>50-75% relief)	15	50%
4	Mild relief (>25-50% relief)	5	16.66%
5	No relief (Below 25%)	0	0

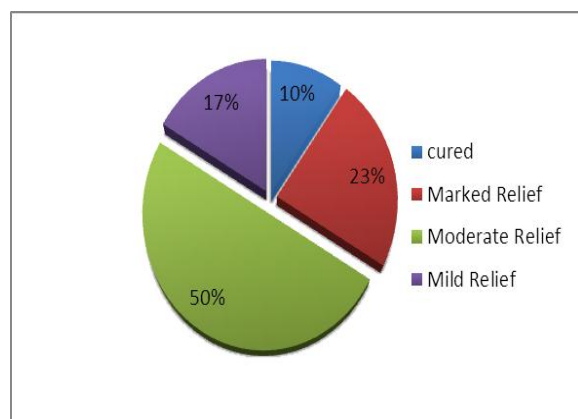


Figure 2: Total effect of therapy in 30 patients of "Tonsillitis".

DISCUSSION

Tonsillitis is very common in our country especially in pediatric population due to the overcrowding, poor socioeconomic status, poor nutrition and unhygienic

conditions. Tonsils are quite prone to be infected due to the presence of crypts which provide condition for the vegetation of the micro-organisms and during deglutition reflex the action of pharyngeal muscle tonsils are bathed in the fluid of food and salivary secretions drawing the samples of bacteria.

As per Ayurveda signs and symptoms of Tonsillitis may be correlated to Tundikeri, a Kapha- Rakta predominant disorder of Gala (Kantha).^[7]

Indiscriminate and injudicious use of Antibiotics has made many micro-organisms resistant along with risk of side effects and this fact increases prevalence chronic Tonsillitis. Since Tonsils are protective glands & vital to the body therefore need to be protected from inflammation.

Considering all these facts, it has been decided to contribute towards the management of this problem hence therefore the disease Tonsillitis was selected for the present clinical trial.

Apart from Shashtra Karma mentioned by Susruta.^[8] other modalities of Ayurveda like Kavala, Gandusham and Pratisaranam etc. are used in the management of Tundikeri which mainly include Katu, Tikta and Ushna, Tikshna Dravyas, because Katu (Pungent) taste decrease Kapha Dosha, which is dominant Dosha in Tundikeri and helps in Rakta Dhatu Sodhana, which is vitiated Dhatu.

As the disease Tundikeri possessed Kapha Dosha predominance and vitiated Rakta Dhatu, therefore study required Kapha Shamaka Rakta Shodhana Chikitsa. The raw materials used for preparation of Gandhaka Druti offer dominance of Katu (pungent) taste and Vipaka. Though, the Til Taila has Madhura Rasa and Vipaka, Til Taila has the Yogvahi property i.e. carry the properties of

the drug or substance in which it is processed without changing its own properties. According to Acharya Vagbhata, the substance which tastes Katu is valuable in the treatment of Galaroga. As per modern science sulphur is antimicrobial drug which possess bactericidal action, therefore, Gandhaka Druti was selected for clinical trial which possess similar desirable properties.

Local route is selected for drug administration since systemic absorption of the drug from local route is minimal. Thus, high concentration was attained at the desired site without exposing the rest of the body. Systemic side effects or toxicity were expected to be minimal. Oral mucosa has good absorptive property which can be further increased by using lipid soluble drugs such as Gandhaka Druti.

As application of Druti with the help of sterile probe or ear bud may produce gag reflex and vomiting therefore patient was advised to come with empty stomach or avoid food at least one hour prior to application. Food soon after the application may interfere with drug absorption therefore it was also advised to avoid food consumption one hour after application. Age group between 2 to 16 years were selected because the patients below the 2 years of age will be non cooperative and 16 years is the upper age limit for pediatric population as per Ayurveda. Duration of treatment was given two times a day for 7 days with a follow up on 3rd, 5th and 7th days. Ashtanga Sangraha mentioned that any treatment procedure should be carried out for minimum 7 days and has to be extended only if it is not responding. More over there is chance of Tonsillitis getting resolved by it-self in and around 7 days. The efficacy of the therapy was assessed with the help of parameters like tonsillar inflammation, throat pain and fever etc. Pre and post treatment photograph and throat swab culture was done to see the local effect of therapy and the effect on infecting organism.

DISCUSSION ON RESULTS

As per age wise distribution, out of 30 patients 14 cases (i.e. 46.66%) were found in 7-11 years of age group. Since this age group is socially very active and mingling with others, they are very liable to get infection especially from other children, individuals and from other crowded areas. High proliferation rate of lymphoid tissue during this age may be the reason behind the recurrent infections of Tonsil.

Sex: - Females are more prone to infection may be due to low immunity. Parental apathy towered nutrition of the female child in our country may also be a reason for the same.

Dominant Ahar Rasa: - Excessive intake of Amla and Madhur Ahara Rasa causes the Vriddhi of Kapha Dosha which stands first in the course of Tundikeri.

Addiction status: - The previously mentioned food items contain preservatives which may act as a triggering factor. Chocolate and ice-cream are Madhur Rasa dominant which vitiate Kapha Dosha which is a main Dosha of Tundikeri. Intake of cold drinks or cold foods may directly cause infection or lower the resistance by vasoconstriction.

Diet: - It is evident that Gramya/Anupa/Audaka-Mamsa Ahara was the main causative factor for any of the Mukharoga, especially Tundikeri & patients follow mixed diet pattern were more affected.

Habitat: - Peoples of urban habitat are more susceptible due to more polluted environmental conditions.

Type of Tonsillitis: - Prevalence of chronic tonsillitis are more due to the misconception that Ayurveda is only effective in chronic disorders and not in acute ones therefore most of the chronic patients registered for the treatment.

Probable Mode of Action of Gandhaka Druti

Tundikeri is a disorder of Kapha Dosha predominance. This predominant Kapha vitiates Rakta Dhatu, together cause inflammation of tonsils. Hence there are needs of treatment which will alleviate Kapha and at the same time it should not be Rakta Dushtikara too. Except Tila Tailam all the content of Gandhaka Druti has Ushna, Tikshna Guna, Katu Rasa and Katu Vipaka. Though Tila tailam has Madura Rasa and Vipaka, it is a Sanyogvahi therefore carries the properties of the substance with which it is processed.

Katu Rasa having properties like Mamsan Vilikhathi i.e. corrodes the muscle tissue Shonita Sanghat Bhinnati i.e. cleans the accumulation or other obstructions. Margan Vivrunoti i.e. cleans and dilates the passage and alleviates kapha Dosha and protects from excessive granulation in ulcer. The substance processing Katu Rasa also has Deepana and Pachana property. They help in the radical removal of toxic substances from the body. They cause the separation of the matters obstructing the Strotas and dilate them. It kills Krimi (micro-organisms). Ushna Veerya has properties like Dahana, Pachana, Swedana, Vilayana which in effect causes Kapha Shamana.

While preparation of Druti, it is directly introduced to the fire i.e. Agnisanskara. Due to Agnisanskara there will be rise in Agni Mahabhoota and decrease in Aap and Prithvi Mahabhoota. Therefore final product will be having Laghu, Tikshna, Sookshma and Ushna properties. The main ingredients of Gandhaka possessed the Krimigna property. These all properties of Gandhaka Druti results in Kapha Dosha Shamana and also rejuvenate Rakta Dhatu leads Samprapti Bhanga which resulting Tundikeri Vyadhi Shamana.

As per modern view Sulphur possesses bacteriostatic as well as bactericidal properties. Apart from Sulphur, Pippali also carries Antimicrobial properties. Shunthi is also known for its Antipyretic and Analgesic effect. Beside these, lipid soluble drugs like Gandhaka Druti are better absorbed from oral mucus membrane; further bio availability of drug was increased by adding Pippali which known as bio availability enhancer.

Limitation of Study

- The procedure is not possible in non cooperative patients.
- Stimulation of gag reflex may produce vomiting.
- Burnt sulphur taste is bothersome to few children.

Further Scope of Study

The numbers of patient were not sufficient to claim this effect therefore further study is advised to ensure result validity:

- By increasing sample size.
- By increasing frequency of application.
- By increasing dose of the drug.
- By continuing the therapy for longer period.
- The efficacy of the drug may be assessed with the combination of other drugs.
- The drug efficacy may be assessed in other conditions like pharyngitis etc.
- The effect of therapy may be assessed by local absorption and its effect on serum level or cellular level.

CONCLUSION

It was concluded that Gandhaka Druti paint (lepa) is an effective therapy in Tonsillitis, since it possess Anti pyretic, Analgesic and Anti microbial action. It is safe, economic and easy to use. The painting procedure is done through the aid of an ear bud or any smooth stick, and hence this may cause vomiting due to stimulation of gag reflex. To get rid of this, instead of painting the medicine can be used in the form of spray. Apart from the way of application the peculiar smell of sulphur too may cause vomiting sensation. To be free from this, the Gandha Nashana Samskara of sulphur can be carried out before preparing the Gandhaka Druti. Further study is suggested in larger sample size to claim the results of study.

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