

Clinical Evaluation of 'Aatarushakadi Kwath' in Thrombocytopenia W.S.R. to Malaria

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ABSTRACT

Malaria with high prevalence and complications which have a long-lasting effect on patients, one of them is Thrombocytopenia. Thrombocytopenia is a medical emergency with significant Mortality. All the signs and symptoms of Thrombocytopenia can be correlated with those of Raktapitta. According to Ayurvedic texts, Raktapitta is said to occur after Jwar, which also suggests the correlation of thrombocytopenia after the onset of Malaria. Conventional treatment modalities, though give satisfactory results, might be required frequently. So, an attempt was made to prove the efficacy of 'Aatarushakadi kwath' in thrombocytopenia with special reference to Malaria. The study was carried out in 2 groups viz. Study group (Aatarushakadi kwath and Antimalarial drug as per requirement) and control group (Antimalarial drug as per requirement) Assessment was done on subjective and objective criteria and results were drawn on basis of Statistical analysis. It was concluded that the therapy provides a good improvement in the symptoms in patients of both the groups, but the rate of improvement was comparatively better in the study group. Also, the study group patients showed a faster rate of rising in platelet count than those of the control group.

KEYWORDS

Malaria; Thrombocytopenia; Aatarushakadi kwath; Antimalarial drug

INTRODUCTION

Now a days new research works is at their peak in the medical field, still, Malaria continues to have its prevalence in tropical countries. Malaria is responsible for considerable morbidity and mortality in Southeast Asia, the Indian subcontinent, and Africa.

About 2 million confirmed malaria cases and 1,000 deaths are reported annually, although 15 million cases and 20,000 deaths are estimated by WHO Southeast Asia regional office. India contributes 77% of total malaria in Southeast Asia [1]. The main thing of concern is that the complications that come across have long-lasting effects on the patient, which include cerebral malaria, severe anemia, hyperbilirubinemia, and especially thrombocytopenia.

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Thrombocytopenia is a clinical entity in which the platelet count in the blood decreases below the normal level, consequently manifesting bleeding disorders like spontaneous hemorrhages. The normal platelet level in adults is between 150,000/mm³ and 450,000/mm³. Platelet counts below 50,000 mm³ increase the risk of dangerous bleeding from trauma; counts below 20,000/mm³ increase the risk of spontaneous bleeding [2].

The manifestations further include petechiae, bruises, malaise, fatigue, generalized weakness, etc.

All the signs and symptoms of thrombocytopenia can be equated with those of Raktapitta, which is vividly elaborated in Ayurvedic texts. Also, as the concept of Nidanarthakar rog [3] states, Raktapitta is said to occur after Jwar, which also suggests the correlation of thrombocytopenia after the onset of Malaria.

The conventional medicines include the use of steroids in higher doses to be tapered off gradually and/or transfusion of blood, platelets, and other coagulatory factors. These treatment modalities, though give satisfactory results, might be required frequently. The use of repeated transfusions is lifesaving but may cause antibody formation to the foreign proteins given through transfusion.

Ayurveda has a lot to offer in this context as described in the treatment of Raktapitta. The combination of drugs Vasa, Draksha, and Haritaki in kwath form is mentioned in the

treatment of Raktapitta vyadhi in Charak Samhita as well as Sharangdhar Samhita. So, an attempt was made to prove the efficacy of ‘Aatarushakadi kwath’ (Charak samhita-Raktapitta chikitsa a day) in thrombocytopenia with special reference to Malaria.

MATERIAL AND METHODS

Materials

Aatarushakadi kwath [4].

Place of Work

Screening and selection of patients was carried out at Kayachikitsa IPD.

Clinical Study

Total 60 patients with ‘Malaria with thrombocytopenia’ were selected and divides into two groups.

Valid written and informed consent was taken from all patients.

Study Group

Freshly prepared ‘Aatarushakadi kwath’ and Antimalarials (as per requirement)

Control Group

Antimalarials as per requirement.

Study Group

‘Aatarushakadi kwath’ and Antimalarials (Table 1).

Drug	Dose	Kala	Duration	Route of Administration	Follow – up
Aatarushakadi Kwath	40 ml Twice a Day	B.I.D (Twice a Day)	Upto 7 Days	Oral	Daily
Antimalarial Drugs	As per Requirement				
Chloroquine	1 g	Stat		Oral	
	500 mg	at 6 Hours, 24 Hours, and 48 Hours			
Artemether/Lumefantrine	80/480 mg	B.I.D	3 Days	Oral	

Table 1: ‘Aatarushakadi kwath’ and antimalarials.

Control Group

Antimalarials (As per requirement) (Table 2).

Drug	Dose	Kala	Duration	Route of Administration	Follow – up
Chloroquine	1 g	Stat		Oral	Daily
	500 mg	at 6 Hours, 24 Hours and 48 Hours			
Artemether/Lumefantrine	80/480 mg	B.I.D	3 days	Oral	

Table 2: Antimalarials.

ASSESSMENT CRITERIA

Subjective Criteria

Bhuktasya Vidaha	Nil (0)	Mild (1)	Moderate (2)	Severe (3)
Angamarda	Visual analogue scale was applied.			
Hrullas				
Jwar	The temperature was noted every day.			
Raktagaman	Yes		No	

Table 3: Subjective criteria.

Parameter	Group	
	Study (A)	Control (B)
	Mean	Mean
Day 1	58033.333	53400
Day 2	59233.33	54200
Day 3	77666.66	70700
Day 4	113666.6	105000
Day 5	142966.6	127566.667
Test	By one - way Anova data	
To analyze comparison in decrease of symptoms	Study (A)	Control (B)
D2 - D1	1200	800
D3 - D2	18433	16500
D4 - D3	36000	34300
D5 - D4	29300	22566
By applying chi-square test for trend	Chi square (trend) - 203.692 DF - 1; Significance level - P <0.0001	
Interpretation	As P <0.0001 Test applied is significant.	

Table 4: Analysis and comparison between platelet counts of trial and control groups.

Parameter	Group	
	Study (A)	Control (B)
	Mean	Mean
Day 1	1.467	1.233
Day 2	1.233	1.067
Day 3	0.833	0.733
Day 4	0.467	0.4
Day 5	0.333	0.3
Test	By one - way Anova data	
To analyze comparison in decrease of symptoms	Study (A)	Control (B)
D2 - D1	0.234	0.166
D3 - D2	0.4	0.334
D4 - D3	0.334	0.333
D5 - D4	0.134	0.1
By applying the chi-square test for trend	Chi square (trend) - 2.089 DF - 1; Significance level - P = 0.1484	
Interpretation	AS P = 0.1484 Test applied is significant.	

Table 5: Analysis and comparison between values of parameter Bhuktasya Vidaha of trial and control groups.

Group		
	Study (A)	Control (B)
Parameter	Mean	Mean
Day 1	5.76	6.76
Day 2	4.43	5.53
Day 3	3.03	3.86
Day 4	1.73	2.6
Day 5	1.13	1.8
Test	BY One - Way Anova Data	By One - Way Anova Data
To analyze comparison in decrease of symptoms	Study (A)	Control (B)
D2 - D1	1.33	1.23
D3 - D2	1.40	1.67
D4 - D3	1.30	0.26
D5 - D4	0.60	0.80
By applying the chi-square test for trend	Chi square (trend) - 1.720 DF - 1; Significance level - P = 0.1897	
Interpretation	AS P = 0.1897 Test applied is significant.	

Table 6: Analysis and comparison between values of parameter Angamarda of trial and control groups.

Group		
	Study (A)	Control (B)
Parameter	Mean	Mean
Day 1	6.833	6.933
Day 2	5.633	5.600
Day 3	4.300	4.467
Day 4	3.133	3.767
Day 5	2.733	3.433
Test	BY One - Way Anova Data	By One - Way Anova Data
To analyze comparison in decrease of symptoms	Study (A)	Control (B)
D2 - D1	1.200	1.333
D3 - D2	1.333	1.133
D4 - D3	1.167	0.700
D5 - D4	0.400	0.334
By applying the chi-square test for trend	Chi square (trend) - 62.049 DF - 1; Significance level - P <0.0001	
Interpretation	As P <0.0001 Test applied is significant.	

Table 7: Analysis and comparison between values of parameter Hrullas of trial and control groups.

Objective Criteria

1. Platelet count: Automated cell counter method.
2. Bleeding time: Duke method.
3. Clotting time: Capillary method.

OBSERVATIONS AND RESULTS

Statistical Analysis

As maximum patients were admitted up to 5 days and very few patients were admitted till day 6 or 7, the values for day 6 and day 7 were not accounted for statistical analysis to avoid bias.

The One-Way ANOVA (Analysis of Variance) Test

It is used to determine whether there are any significant differences in the means of two or more groups and is used for quantitative data.

Chi-Square Test for Trend

It is a statistical test that tests for the existence of a relationship between two variables and is used for graded qualitative data.

Every patient was given antipyretics after the occurrence of fever; hence, no statistical analysis was done for the

temperature criteria as the effect of the trial drug on jwar cannot be assessed because of the use of antipyretics.

The values of the observations of the bleeding time and the clotting time were all within the normal limits, so no statistical analysis was done to assess them (Table 4 - Table 7).

DISCUSSION

The discussion-based on Clinical features, Biochemical tests, Sampraptibhanga and probable mode of action of the drug as:

Clinical Features

Bhuktasya vidaha

The study group showed faster improvement in the symptom than the control group. In the study group, the improvement in the symptom from the first day of clinical trial till the end of study was 77.30% while in the control group, it was 75.66%.

Angamarda

In the study group, the improvement in the symptom from the first day of clinical trial till the end of the study was 80.38% while in the control group, it was 73.37%.

Hrullas

In the study group, the improvement in the symptom from the first day of clinical trial till the end of the study was 60.20% while in the control group, it was 50.72%.

Biochemical Tests

Platelet count

The rise in platelet count from the first day up to the last day of the clinical trial of patients of group A was 96.45% and that in group B was 94.90%. This shows that the rate of rising platelet count in group A was more than that in group B.

Bleeding time and clotting time

No patients were reported with abnormal bleeding in both groups. So, no statistical analysis was made for their values. There was no relation between platelet counts and bleeding or clotting time.

Samprapti bhanga and probable mode of action of the drug

The sheet veerya drugs and the virechan property of haritaki and draksha help in alleviating the pitta dosha, thereby helping in reducing the severity of the symptom bhuktasya vidaha. Vasa, haritaki and sharkara also affect the rasavaha srotas, thereby reducing the symptoms angamarda and hrullas, which are produced by rasavaha srotodushti. The drugs draksha, haritaki and sharkara belong to the jwarhar mahakashay according to Charkacharya [5]. These drugs have a role in the treatment of jwar, thereby having an effect in curing or reducing the symptoms of Raktapitta which is its nidanarthakar roga.

Effect on platelet count

Though there are many coagulatory factors responsible for hemostasis, vasoconstriction and platelet aggregation at the site of bleeding are the most important events of coagulation. So, the drugs vasa, draksha and haritaki might help in vasoconstriction. The drugs used for the study have kashay, tikta and madhur rasa which helps in alleviating the pitta dosha as described in the samprapti, the ushna guna of pitta increases which is reduced by the sheet veerya of vasa, draksha, madhu and sharkara; and the tikshna guna of pitta is alleviated by the mrudu guna of draksha and sharkara. Also, there is Rakta dhatu dravata vrudhhi in Raktapitta, so here, the shonitsthapan and kledashoshan guna of haritaki help in the process of sampraptibhanga.

The major amount of formation of platelets takes place in the bone marrow. It is the asthigat majja according to Ayurvedic concepts and majjagat rogas are treated by madhur and tikta rasatmak dravyas. So, the drugs used for

study, having these properties, might have helped in the production of platelets or in reducing the destruction of platelets.

Also, as Acharya Dalhana states that majjadhara kala can be equated with pittadhara kala, the drugs acting on the pittadhara kala will affect the majjadhara kala. This suggests the role of the above drugs in the production of platelets.

CONCLUSION

Clinical evaluation of 'Aatarushakadi kwath' in thrombocytopenia with special reference to Malaria was completed on 60 patients.

Effect of Therapy

From the statistical analysis, it is concluded that the therapy provides a good improvement in the symptoms of Bhuktasya vidaha, angamarda, and hrullas in patients of both groups, but the rate of improvement was comparatively

better in the study group. Also, the patients of both groups showed a significant rise in the platelet counts. Comparatively, the study group patients showed a faster rate of rising in platelet count than those of the control group, but the difference was marginal.

Scope for Future Study

Since this is the first attempt to evaluate the efficacy of Aatarushakadi kwath in thrombocytopenia and the study showed good results, it is recommended that it should be carried out in a large number of patients to evaluate and analyze the results on a large scale. The drug administration should be done for a longer duration for better results. Also, further research should be done on evaluating the efficacy of this formulation on jwar also, as the treatment on the main disease (jwar) cures or reduces its upadravas (Raktapitta) also. A study should be done to evaluate its efficacy in using it as a prophylactic drug in the treatment of jwar to prevent its complications or updrafts.

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