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Assessing the efficacy of *Nagarjunabhra Rasa* with 21 *Bhavana* in the management of First-Degree AV Block and Bradycardia: A Comprehensive Case Study

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ABSTRACT

First-degree AV block features a P-R interval over 0.2 seconds, often indicating early AV nodal disease. While it can be benign, especially in individuals with high vagal tone, fibrotic changes are common in older adults. A case study involving a patient with first-degree AV block and a 2.34-second sinus pause treated with *Nagarjunabhra Rasa* (Arjuna bark's decoction) showed promising results. Administered as one 125 mg tablet twice daily for three months, the treatment normalized heart rate and eliminated sinus pauses without adverse effects. This suggests the formulation's potential efficacy, warranting further study in larger populations.

Key words: *Hrid Roga*, *Nagarjunabhra Rasa*, *First Degree AV Block*.

INTRODUCTION

First-degree AV block is defined by a P-R interval exceeding 0.2 seconds on ECG, indicating preserved atrial-ventricular conduction.^[1] It is often seen in elderly patients as an early sign of AV nodal disease, with "marked" first-degree block denoted by a P-R interval over 0.30 seconds.^[2] Common causes include fibrotic changes, myocardial infarction, coronary heart disease, electrolyte imbalances, infections, medications, and systemic diseases. Most cases require only routine observation, but regular evaluations are

essential due to the increased risk of atrial fibrillation or higher-degree AV block.^[3] In Ayurveda, cardiac disorders are classified as *Hrid Roga*, which includes types such as *Vataj* (~angina like pain), *Pittaja* (~suppurating or inflammatory), *Kaphaja* (~Organic disorders), *Tridoshaja*, and *Krimija Hrid roga* (~Valvular heart disease).^[4] Susruta notes that *Hridroga* involves vitiation of *Rasadhatu*^[5] (circulatory fluid), influenced by *Vyan Vayu*, responsible for impulse conduction and blood circulation. Cardiac function is initiated by electrical impulses from the SA node, traveling through the AV node and His-Purkinje system, leading to heart muscle contraction and blood circulation.

CASE REPORT

A 55-year-old male patient presented with the complaints of tightness in chest with frequent episodes of shortness of breath and exertion with no previous cardiac events. He is non-Diabetic and non-Hypertensive, moderate smoker, salesman by occupation. On examination his BP was 90/60 mm of Hg and pulse rate was 40/bpm.

Clinical Findings

Dashavidh Pariksha (~tenfold examination) of the patient suggests *Prakriti* of patient was *Vatapradhan-*

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Pittaja, Dushya (~which gets vitiated) Rasa, Rakta and Mamsa, Vikriti-Vata Kapha, Satva (~mental status) Avara and Satmya (~compatibility) Madhyama, Ahara was Mishra, Madhyam Sara, Madhyam Samhanan (~built), Abhyavharan Sakti, Jaran Sakti Madhyam, Vyayam Sakti Avara.

Table 1: Timeline

Timeline	Clinical events and intervention
10/4/21	The patient started suffering from frequent episodes of tightness in chest, shortness of breath (SOB) and exertion.
10/08/21	Came for Ayurveda treatment. Pulse rate was found to be 40bpm, BP was 90/56 mm of Hg, with c/o exertion and SOB. 24-hour Holter test, advised.
14/08/21	24 hr Holter shows basic sinus rhythm, no supra ventricular tachycardia, no sustained ventricular tachycardia or tachycardia, occasional supra ventricular ectopic's and ventricular premature contractions. Intermittent 1° AV block and sinus pause noted. Suspecting of Sick Sinus Syndrome.
16/08/21	Nagarjunabhra Rasa 125 mg twice daily with lukewarm water after food for 90 days advised
10/11/21	No significant improvement in patient's general condition noted. Exertion still persisted with occasional episodes of SOB. Pulse rate - 46 bpm
15/12/21	Nagarjunabhra Rasa with 21 Bhavna, 125 mg twice daily with lukewarm water started.
18/01/22	Nagarjunabhra Rasa with 21 Bhavna continued. Improvement in condition noted, pulse rate 56 bpm, BP-90/60 mm of HG, episodes of SOB not occurred.
20/02/22	Improvement in condition noted, pulse rate 60 bpm, BP - 100/60 mm of Hg.
17/03/22	24-hour Holter test repeated
19/03/22	24 hr Holter shows basic sinus rhythm, no supra ventricular tachycardia, no sustained ventricular tachycardia or tachycardia, no atrio-ventricular block or sinus pause noted, Occasional supra ventricular ectopic's and ventricular premature contractions.

Diagnostic Assessment: It was done with patient's complaints and 24 hr Holter test.

Table 2: 24-hour Holter test (before treatment) 14/08/21

Rate dependent events			Conduction	
Avg. heart rate	50 bpm		Pause >2.5 sec	nil
Min heart rate	36 bpm at 21.48hrs		Longest pause	2.34 sec at 16.38 hrs
Max heart rate	77 bpm at 10.5 hrs			
Total beats	72703			
Ventricular events			Supra ventricular events	
VE total	5		SVE total	158
VE pair total	0		SVE pair total	0
Longest V - Tach	Nil		Longest SV-Tach	Nil
		ST Analysis		
	Ch1	Ch2	Ch3	
Total ST minutes	0	0	0	
Longest ST Episodes	Nil			

Max +ve Delta ST of 3.44 mm at 2.27 hrs in Ch3	
Max -ve Delta ST of 0.00 mm at 0.00 hrs in Ch1	
Total analysed minute :1439	Rejected minutes: 1

% of rejected minutes: 0.07	
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24 hr Holter shows basic sinus rhythm, no supra ventricular tachycardia, no sustained ventricular tachycardia or tachycardia, occasional supra ventricular ectopic's and ventricular premature contractions. Intermittent 1° AV block and sinus pause noted. Suspecting of Sick Sinus Syndrome.

Therapeutic Intervention

The patient was treated with monotherapy of *Nagarjunabhra Rasa* (21 *Bhavna*) 1 tab (125 mg) with lukewarm water for 3 months.

Follow-up and Outcome

Table 3: 24-hour Holter test (after treatment) 19/03/22

Rate dependent events			Conduction	
Avg. heart rate	07 bpm		Pause >2.5 sec	Nil
Min heart rate	47 bpm at 11.59hrs		Longest pause	Nil
Max heart rate	96 bpm at 14.33 hrs			
Total beats	100200			
Ventricular events			Supra ventricular events	
VE total	2		SVE total	79
VE pair total	0		SVE pair total	2
Longest V - Tach	Nil		Longest SV-Tach	Nil
		ST Analysis		
	Ch1	Ch2	Ch3	

Total ST minutes	0	0	1139	
Longest ST Episodes	Nil			

Max -ve Delta ST of 0.00 mm at 0.00 hrs in Ch1	
Total analysed minute :1440	Rejected minutes: 18
% of rejected minutes: 1.25	

24 hr Holter shows basic sinus rhythm, no supra ventricular tachycardia, no sustained ventricular tachycardia or tachycardia, no atrio-ventricular block or sinus pause noted, Occasional supra ventricular ectopic's and ventricular premature contractions.

DISCUSSION

The American Heart Association (AHA)/American College of Cardiology (ACC) guidelines typically do not recommend permanent pacemakers for first-degree AV block unless the P-R interval exceeds 0.30 seconds with symptoms. Despite being considered benign, studies show patients with this block face higher rates of atrial fibrillation, pacemaker placement, and all-cause mortality compared to those with normal intervals.^[1]

Ayurvedic assessment of the patient was identified as an imbalance in *Vyana Vayu*, contributing to the patient's symptoms.^[5] *Nagarjunabhra Rasa* has an extensive use in Ayurveda for conditions like all types of cardiac disorders, traditionally composed of 100 *Puti Abhraka Bhasma*, smeared and triturated with *Terminalia arjuna* bark's decoction seven times till dryness, is said to be a *Rasayana* (anti-oxidant) drug having property of *Shula* (pain) and *Tridosha* pacification.^[6]

It has got anti-anginal, anti-ischemic, anti-platelet aggregating, antihypertensive, anti-hypercholesterolemic and anti-atherosclerotic properties.^[7,10] Various modern studies too suggested *Terminalia arjuna* bark's effectiveness in stable angina.^[8] *Abhraka Bhasma* is a calcium, potassium,

magnesium, iron, silicates etc. multi-mineral compound having *Yogavahi* (bio-activity enhancer) characteristic and is said to be *Hridya* (cardio-protective) itself.^[9]

The initial Holter monitor showed basic sinus rhythm with intermittent first-degree AV block and sinus pauses, indicating possible Sick Sinus Syndrome. After an unsatisfactory 90-day treatment with *Nagarjunabhra Rasa*, the formulation was enhanced with 21 *Bhavna* using *Arjuna* bark, aligning with Chakrapani's principle that "*Samskara* transforms the quality of the drug."^[11] A follow-up showed no AV block or sinus pauses.

CONCLUSION

From the above case study, it can be observed that *Nagarjunabhra Rasa* with 21 *Bhavna* can be an excellent alternative to a patient of AV block with long sinus pause, where pacemaker is the only permanent placement. However, it is also to be noteworthy that, since, the preparation of *Nagarjunabhra Rasa* with 21 *Bhavna* instead of 7, is an *Anabhuta Yoga* (experiential knowledge) rather than the classical standard practice, it needs further research and recognition both from Ayurvedic fraternity as well as in the parlance of modern system of medicine.

Declaration of patient consent

Informed consent has been taken from the patient prior to performing the procedure as well as permission for publishing the images included herein.

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