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Comparison of effectiveness of Cinnarizine and Pheniramine maleate in prophylaxis of motion sickness among outpatients at Tirumala

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Abstract:
Background: *Motion sickness is a syndrome characterized by nausea, vomiting and non vertiginous dizziness resulting from body motion while travelling. Drugs used to prevent this condition are antihistaminics like promethazine, phenergan and cinnarizine etc, and anticholinergics.*
Aim and objectives: *To compare the effectiveness of Cinnarizine and Pheniramine maleate in prophylaxis of motion sickness at Tirumala.*
Materials and methods: *100 patients of group A with motion sickness received Cinnarizine and 100 patients of group B received Pheniramine maleate half an hour before journey.*
Results: *No difference in prevention of all symptoms of motion sickness was observed between both drugs during and after the journey. Both drugs are equally effective.*
Conclusion: *Pheniramine maleate is a cheaper but effective drug for prophylaxis of motion sickness.*
Key words: *Motion sickness, Cinnarizine, Pheniramine maleate , Patients , Tirumala*

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I. Introduction

Motion sickness, generally considered to be of physiological origin, is an unpleasant condition that occurs when persons are subjected to certain types of motion and is induced during passive locomotion in vehicles, generated by unfamiliar body accelerations, to which the person has not adapted, or by an intersensory conflict between vestibular and visual stimuli[1, 2]. It results in the common symptoms of nausea, nonvertiginous dizziness, and malaise[1]. Motion sickness is a complex syndrome and can occur during exposure to physical motion, visual motion, and virtual motion [3]. A functional vestibular system is a prerequisite for motion sickness; subjects with nonfunctioning labyrinths are immune to motion sickness [4].

Motion sickness is a very common problem that occurs during journeys (long journeys/mountain areas). This motion sickness is a common cause for morbidity during journeys. Patients become totally incapacitated during the journey period. The central component is vomiting and the most frequently reported accompaniments are pallor, sweating, and nausea[5]. Nausea and vomiting both caused by stimulation at one of the four sites – gastrointestinal tract, the vestibular system, the chemoreceptor trigger zone and the cerebral cortex [6]. People are unable to take food and water due to vomiting, become very dehydrated and feel weak during journey. Motion sickness susceptibility fluctuates with age [7]. To control these vegetative symptoms, scopolamine and antihistamines are the most effective drugs[4]. In olden days, people used to take lemon juice with salt before journeys to avoid nausea and vomiting. In 21st century, there are number of drugs available for motion sickness. It has been claimed that the antihistaminic agents (promethazine, phenergan, stugeron) are effective in prophylaxis of motion sickness.[8]. Anticholinergic property of H1 antagonists may be responsible for their antimotion sickness property [9]. Tirumala to Tirupati journey is a ghat road with hair pin bends. Several people suffer from motion sickness during journey both up and down the hills especially during the descent. It is easier to prevent motion sickness than to treat it [10]. Antihistamines are the most frequently used and widely available medications for motion sickness; non-sedating ones appear to be less effective. Antihistamines commonly used for motion sickness include cinnarizine, cyclizine, dimenhydrinate, meclizine, and promethazine. Other common medications used to treat motion sickness are anticholinergics such as scopolamine[11]. Cinnarizine (moderately sedative) is also used to treat motion sickness. Cinnarizine (stugeron) is the drug routinely given for motion sickness in Aswini hospital. Pheniramine is also moderately sedative antihistamine. This study was planned to compare the effectiveness of both the drugs in prophylaxis of motion sickness during their approximately one hour descent journey from Tirumala to Tirupati.

II. Materials and Methods

This is a prospective, randomized, parallel group and open labelled clinical study at Aswini hospital, Tirumala Tirupati Devasthanam (TTD) at Tirumala, Tirupati, Chittoor district, Andhra Pradesh. Permission from the Hospital Superintendent was taken to conduct the study. Ethical clearance was taken prior to study. Informed consent was taken. This study was done during a period of 15 days. A total of 200 people with history of motion sickness who visited OPD for prophylactic medication before undertaking downhill journey from Tirumala to Tirupati were included. Both male and female patients were considered for this study. History of any drug intake, chronic diseases was recorded. This was followed by general, systemic and ENT examination.

Inclusion criteria:

Patients with past history of more than 3 episodes of motion sickness who experienced nausea, vomiting and dizziness during travelling were included. Patients with age ranging from 12 to 70 years were included.

Exclusion criteria:

Patients who were taking antibiotics like erythromycin, tetracycline, fluoroquinolones, metronidazole, chloroquine, quinine were excluded because of their emetogenic potential. Patients with chronic diseases like tuberculosis, kidney and liver diseases, diabetes, hypertension and pregnant women were excluded.

Patients were assigned to two groups of 100 each by simple random method. Drugs were advised to be taken orally 30 minutes before the journey [10] .Group A received Cinnarizine 25 mg half an hour before journey and Group B received Pheniramine maleate 25 mg half an hour before journey.

Follow up: Patients were contacted during the journey and hourly for first three hours and every two hours for next 6 hours to know if they had experienced nausea, vomiting or dizziness. They were enquired for any anticholinegic adverse effects like sedation and dryness of mouth. Answers were obtained and results were documented. Data was collected and entered in MS Excel and analysed with Chi square test.

III. Results

In this study, 100 patients given Cinnarizine among them, 88 patients had no vomitings as seen in Table 2. Of 100 patients given Pheniramine maleate, 85 had no vomitings. The difference observed in both groups is not statistically significant.

Table 1: Gender distribution of patients

Gender	Cinnarizine group	Pheniramine group
Male	56	49
Female	44	51

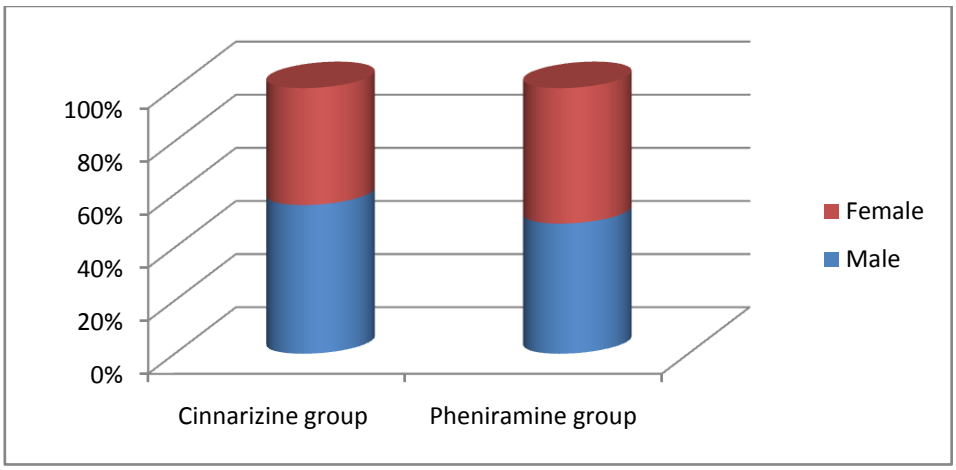

Fig1: Graph showing gender distribution in both groups

Table 2: Prevention of symptoms in both groups

Symptoms of motion sickness	Group A (cinnarizine)	Group B (pheneramine maleate)
Nausea	92	90
Vomiting	88	85
Dizziness	84	80

P value – 0.7 statistically not significant

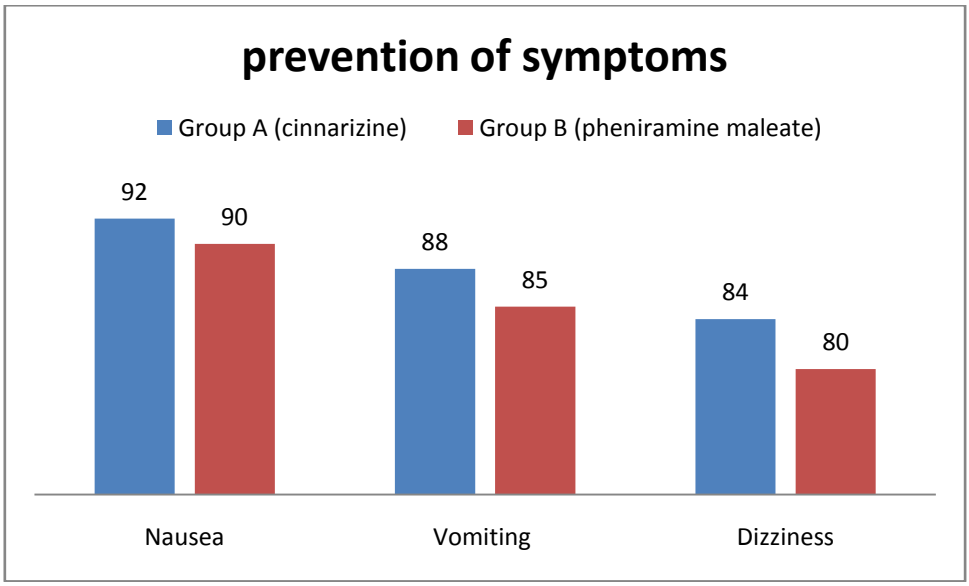

Fig 2: Graph showing prevention of symptoms of motion sickness in both groups

Table 3: Adverse effects observed with antihistaminics

Adverse effects	Cinnarizine	Pheniramine maleate
Drowsiness	89	91
Dryness of mouth	5	6

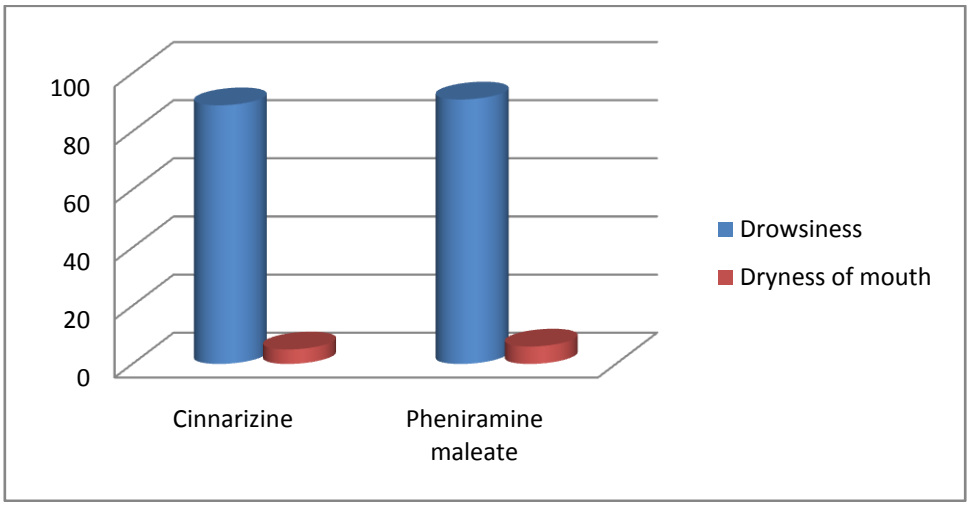

Fig 3: Graph showing percentage of adverse effects observed in both groups. P>0.05 statistically not significant.

IV. Discussion

Cinnarizine is H1 antihistamine having anticholinergic and antiserotonergic action, sedative and vasodilator properties. It inhibits vestibular sensory nuclei in inner ear, suppresses postrotatory labyrinthine reflexes, possibly by reducing stimulated influx of calcium ions from endolymph into the vestibular sensory cells [12]. It is highly effective antivertigo agent [10]. Side effects are sedation and mild gastrointestinal upset. Pheniramine is available as 20-50 mg oral. Injections are also available. The drug Pheniramine is used to treat allergic conditions like allergic rhinitis, itching skin and skin rashes.

88 patients of Cinnarizine group and 85 patients of Pheniramine group had no vomiting. Symptomatic improvement was almost similar with both the drugs. Most common adverse effect was drowsiness in 89% of Cinnarizine group and 91% of Pheniramine maleate group. Drowsiness subsided on its own. Patients did not feel uncomfortable due to drowsiness but felt restful. Pharmacoeconomics mainly works on the health economics which particularly focuses upon the costs and benefits of drug therapy[13] . The cost of one tablet of Cinnarizine (stugeron) is 3.69 Rs and the cost of Pheniramine maleate (Avil) is 0.45 Rs. These two drugs are with same efficacy but Pheniramine costs less. So, Pheniramine maleate is cost effective drug.

V. Conclusion

In this study, Cinnarizine and Pheniramine maleate were found to have similar level of efficacy in preventing symptoms of motion sickness when given half an hour before the journey. Adverse effects experienced were similar. Pheniramine maleate is cheaper alternative to Cinnarizine in prophylaxis of motion sickness.

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