



# **Effect of Aprepitant on Chemotherapy-Induced Nausea and vomiting in Children with malignancy**

**Aziz Eghbali, F.Khazaei Kouhpar,  
R .Rahimi Afzal, Aygin Eghbali**

**Associate Professor, Department of  
Pediatric Hematology & oncology,  
Aliasghar Hospital, Iran University of  
Medical Sciences**



# Introduction:

- **Nausea** is the most common complication of chemotherapy which may also be accompanied by vomiting.
- **Aprepitant** has been used to prevent chemotherapy-induced and post-surgery nausea and vomiting.



# Introduction:

- Regarding the **limited number of studies** addressing the effect of aprepitant on chemotherapy-induced nausea and vomiting (CINV) in children, the present study is aimed to determine the effect of aprepitant on reducing the severity and frequency of nausea and vomiting in acute and delayed phases of chemotherapy.

# Method:

- This triple-blind clinical trial was conducted on 60 patient who received chemotherapy.
- Each patient received a single dose of 40  $\mu\text{g}/\text{kg}$  of granisetron along with placebo, 1 hour prior to chemotherapy.
- The patients received the same medication in the second and third days.

# Method:

- Then, the same patient, in another chemotherapy course with the same protocol, received aprepitant in addition to granisetron.
- The dose of aprepitant was as follows :125 mg for the age range of 12-18y, 3 mg/kg (up to 125 mg) for 5-12y in the first days; 2 mg/kg (up to 80 mg) in the second and third days.

# Method:

- Nausea severity was evaluated by **VAS 0-100** in which 0 and 100 scores implied no nausea and most severe nausea, respectively.
- The severity of **vomiting and vomituration** was determined by **WHO scale** including never,(G0) once in 24 h(G1), 2-5 times in 24 hours(G2), more than 6 times in 24 hours(G3) and severe life-threatening vomiting(G4).

## Method:

- In this way, each individual acted as the control of its group in the other course of chemotherapy with the same drug diet.



## Results:

- The mean age of patients was 9.3 3 years; 18 patients (30%) were male while 42 (70%) of them were female.
- Nausea and vomiting were higher in the control group all the time; these differences were statistically significant..

# Results:

Table 1: Mean and standard deviation of VAS in the two groups

Index	Control		Intervention		Significance of Mann-Whitney test
	SD	mean	SD	mean	
VAS 1	3	3.06	2.19	1.5	0.009
VAS 2	3.11	2.92	1.56	0.9	0.001
VAS 3	3.5	2.9	0.9	0.5	0.001
VAS 4	2.72	2.1	0.56	0.233	0.0001
VAS 5	2.33	1.466	0.46	0.166	0.003
Friedman significance	F=16.136 P=0.00001		F=11.722 P=0.0001		

# Results:

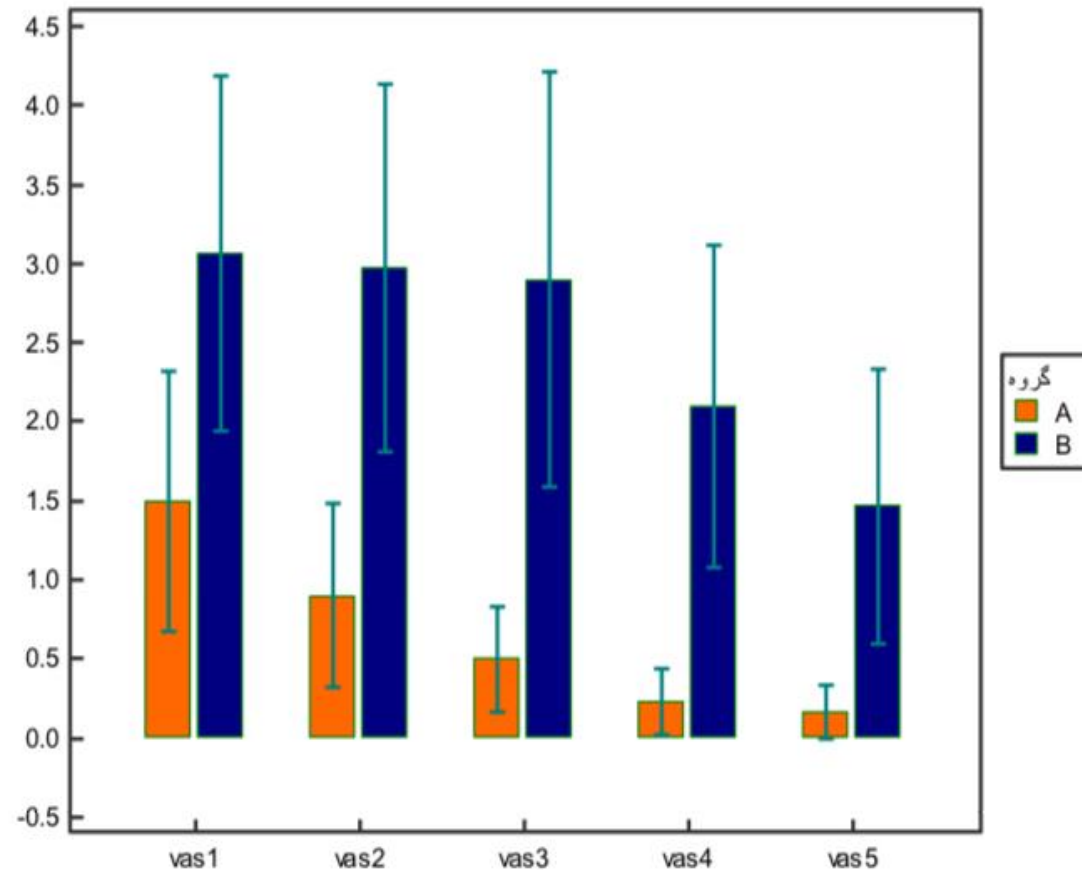


Fig 1: Comparison of VAS index in the two treatment groups

Table 5: Bonferroni paired comparison of vomiting between the two groups

	Control	Different ( $P < 0.05$ ) ) from variable nr	Intervention	Different ( $P < 0.05$ ) fro m variable nr
	Mean rank		Mean rank	
(1) vomiting1	3.4333	(3) (4) (5)	3.1667	(3) (4) (5)
(2) vomiting2	3.0667		3.0833	
(3) vomiting3	2.9333	(1)	2.9167	(1)
(4) vomiting4	2.9167	(1)	2.9167	(1)
(5) vomiting 5	2.6500		2.9167	(1)

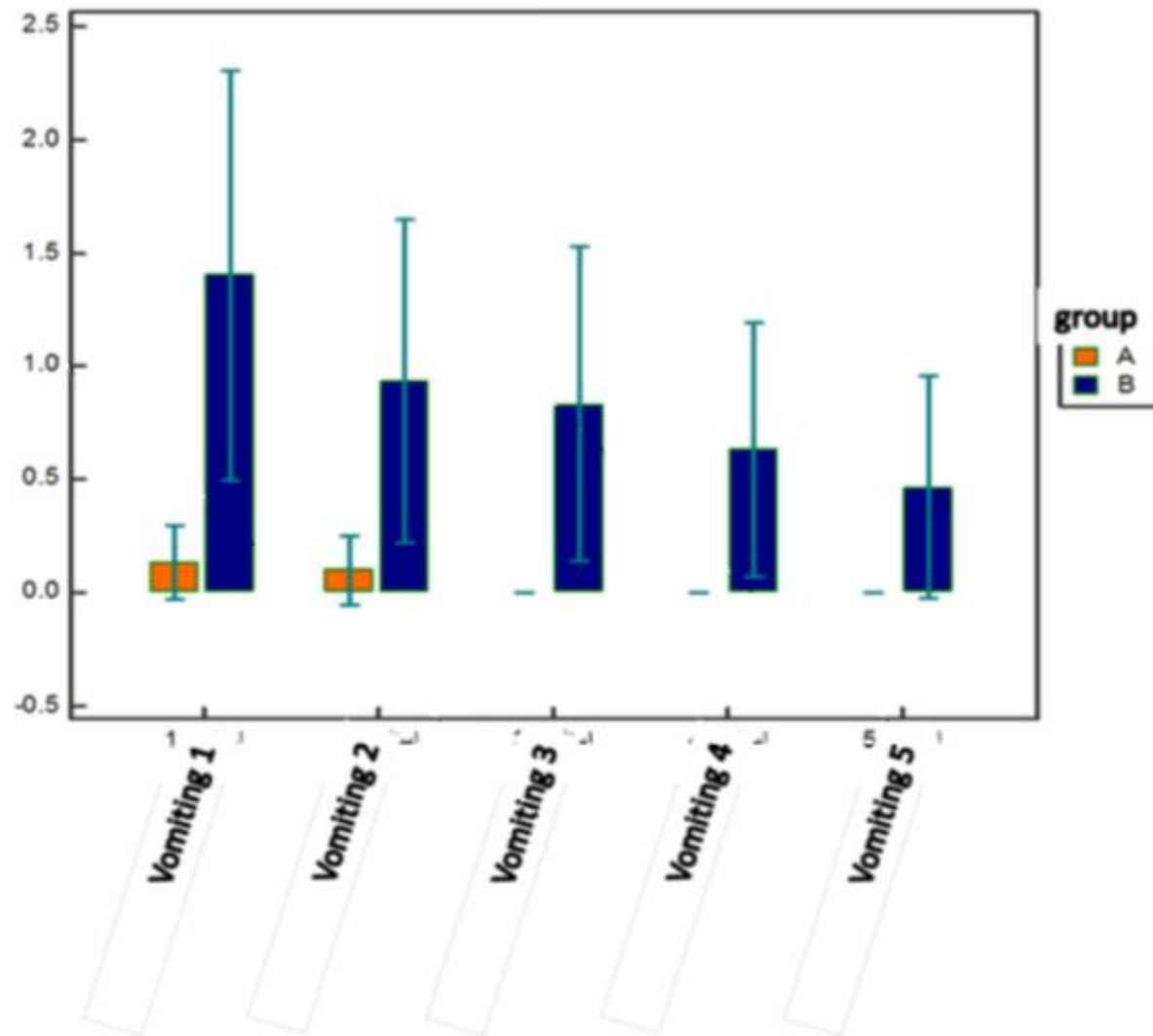


Fig 2: Vomiting status in the two treatment groups

# Results:

Table 7: Mean and standard deviation of vomituration in the two groups

Index	Control		Intervention		Significance of Mann-Whitney test
	SD	Mean	SD	mean	
vomituration 1	3.1	1.909	2.006	0.607	0.054
vomituration 2	3.01	1.727	0.95	0.214	0.001
vomituration 3	2.55	1.136	0.377	0.0714	0.016
vomituration 4	2.16	1	0	0	0.008
vomituration 5	1.14	0.409	0.18	0.035	0.133
Freedman significance	F=7.068 P-value=0.00006		F=3.354 p-value=0.012		

# Results:

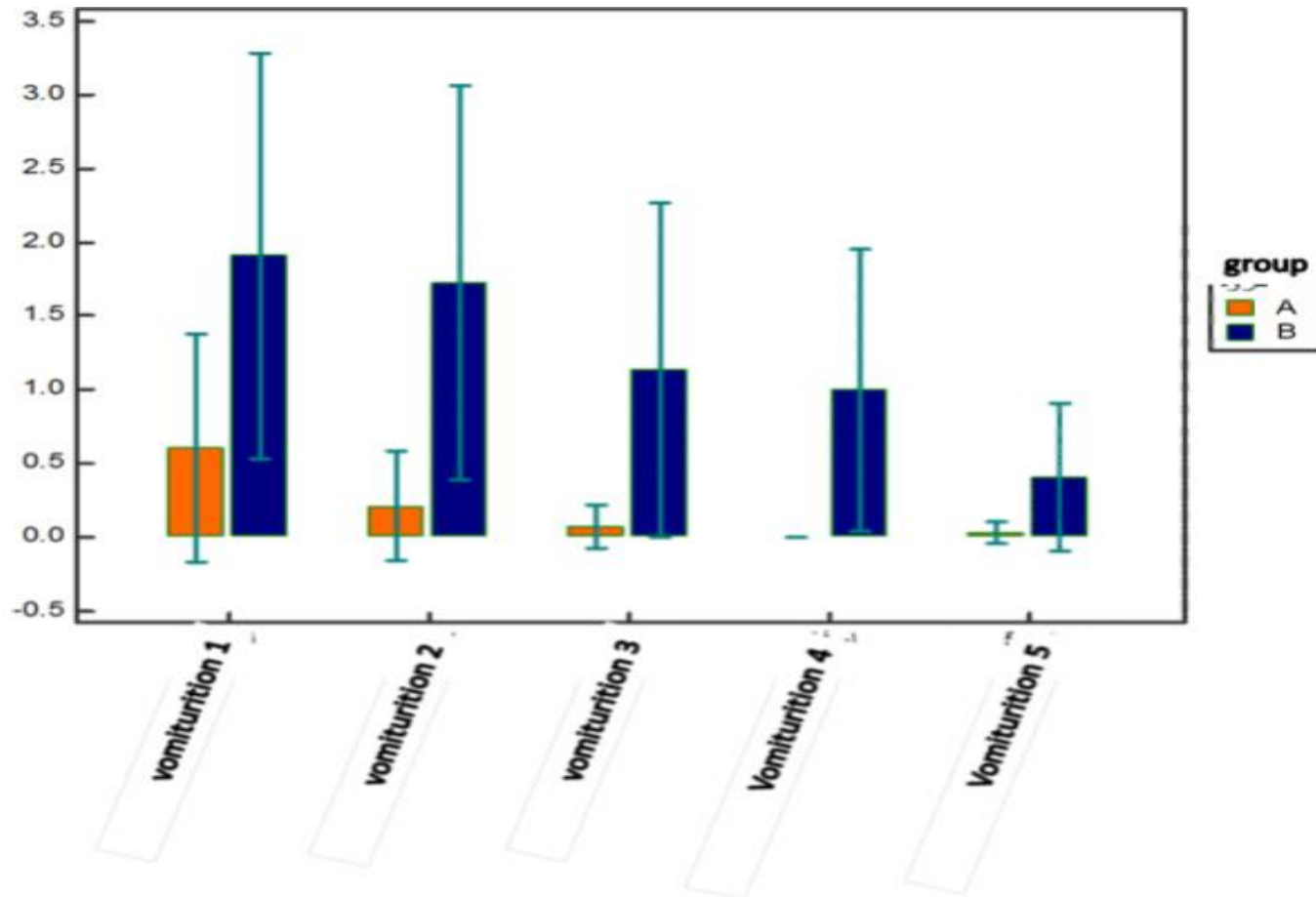


Fig 2: Vomituration status in the two treatment groups

# Discussion and conclusion:

- Based on the results, **aprepitant** could be **administered** along with other antiemetic drugs as a **useful treatment to prevent and treat the chemotherapy-induced nausea and vomiting** which may enhance the treatment condition of patients and improve their recovery.



## Discussion and conclusion:

- Evaluation and comparison of N/V in the patients showed that **VAS mean** of all the groups was significantly higher than the control group.
- On the other hand, concerning the vomiting status of the patients, the mean vomiting and vomituration frequencies of both groups were significantly higher than the control group.

## Discussion and conclusion:

- In a study in 2015, **Marcia** et al. investigated the effects of aprepitant on CINV of children suffering from cancer.
- Their statistical analyses showed that this drug can be employed as a *standard treatment for the children suffering from severe nausea and vomiting* .

# Discussion and conclusion:

- Their report is in line with our results indicating the efficacy of this drug in treatment of N/V.
- In another study by Megan et al in 2014, aprepitant was effective on the chemotherapy-induced complications including N/V among the children patients.

# Discussion and conclusion:

- This means **that aprepitant is a safe and tolerable** drug for controlling N/V among children under chemotherapy.
- In this content, the evaluations results showed that *although aprepitant is effective on children below the weight of 40 kg, but it may not completely reduce CINV.*

# Discussion and conclusion:

- In another study on chemotherapy-induced complications in children, **Sammer** et al evaluated the therapeutic effect of aprepitant additive on children under chemotherapy.
- Their statistical analyses showed that aprepitant **can significantly reduce the moderate to severe phases of CINV.**
-

## Discussion and conclusion:

- It could also decrease the acute phase of CINV when applied as an auxiliary drug along with ondansetron and dexamethasone .
- In this regard, their results were similar to us.

# Discussion and conclusion:

- In a double-blinded randomized clinical trial in 2015, Kang et al.
- Their statistical results revealed that 3-dose oral aprepitant in combination with ondansetron, with or without dexamethasone, can significantly prevent from CINV in children and teenagers experiencing chemotherapy when compared with controls or those treated by Ondansetron with or without dexamethasone .

# Discussion and conclusion:

- In their study, Naviri et al addressed aprepitant used as a neurokinin-1 receptor antagonist to treat CINV based on previous studies.
- Their statistical analyses revealed that the efficacy of aprepitant was not proven on children and teenagers under chemotherapy.



# THANK YOU FOR YOUR ATTENTION

