Efficacy of olanzapine for the prophylaxis and rescue of chemotherapy-induced nausea and vomiting (CINV): a systematic review and meta-analysis

Ronald Chow[1], Leonard Chiu[1], Marko Popovic[1], Rudolph Navari[2], Nathan Shumway[3], Nicholas Chiu[1], Henry Lam[1], Milica Milakovic[1], Mark Pasetka[1], Sherlyn Vuong[1], Edward Chow[1], Carlo DeAngelis[1]

Radiation Oncology UNIVERSITY OF TORONTO

Sunnybrook HEALTH SCIENCES CENTRE

[1]Sunnybrook Odette Cancer Centre, Toronto, Canada

[2]University of Alabama Birmingham School of Medicine, Birmingham, USA

[3]San Antonio Military Medical Center, San Antonio, USA

Objective

- Investigate the efficacy of olanzapine in relation to other antiemetics in the prophylaxis and rescue of CINV, as reported by randomized controlled trials (RCT)

Methods

- A literature search was conducted in Ovid MEDLINE from 1946 to June Week 1 2015, EMBASE and EMBASE Classic from 1947 to 2015 Week 24, and the Cochrane Central Register of Controlled Trials up until 2015
- RCTs were included if they compared olanzapine to other antiemetics in either a prophylaxis or breakthrough setting, with at least one of the endpoints – no emesis, or no nausea
- The primary endpoints were the percentage of patients achieving no emesis or no nausea in the acute, delayed and overall phases

Results

- 13 eligible RCTs were identified – 10 in the preventative setting and 3 in the breakthrough setting

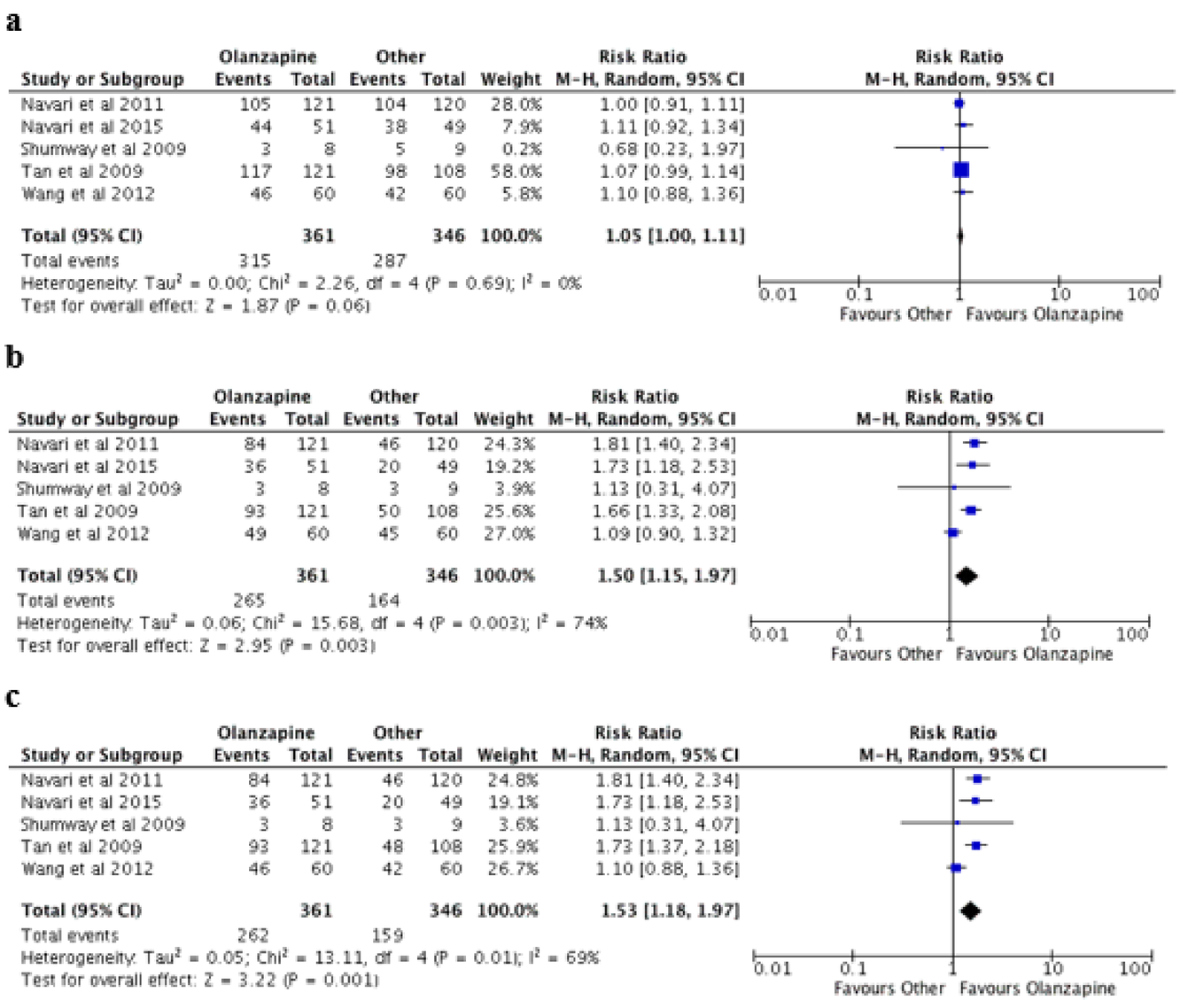

Fig. 2 a Efficacy of olanzapine compared with other standard antiemetics in the prophylaxis of chemotherapy-induced nausea and vomiting—no nausea in the acute phase **b** No nausea in the delayed phase **c** No nausea in the overall phase

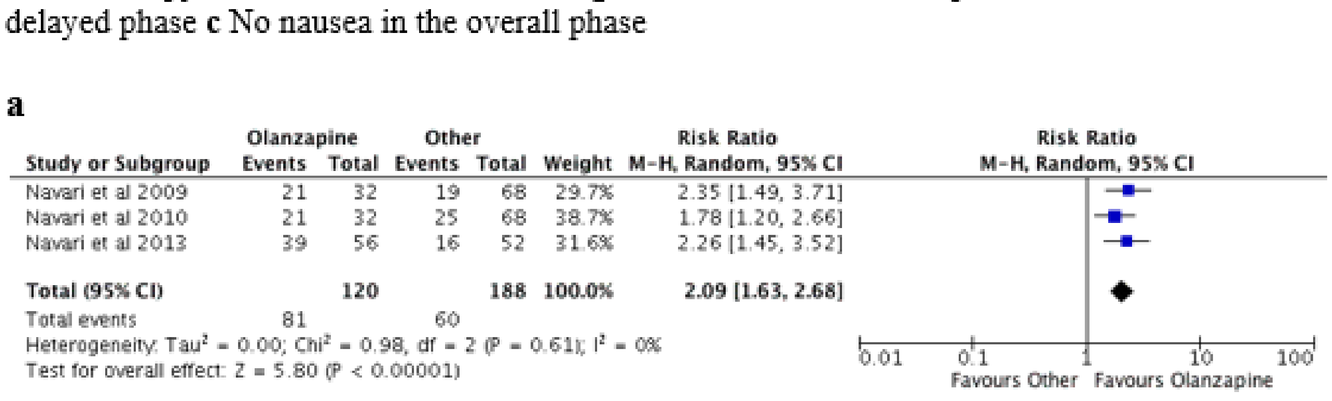

Fig. 3 a Efficacy of olanzapine compared with other standard antiemetics in the rescue of breakthrough chemotherapy-induced nausea and vomiting—no emesis.

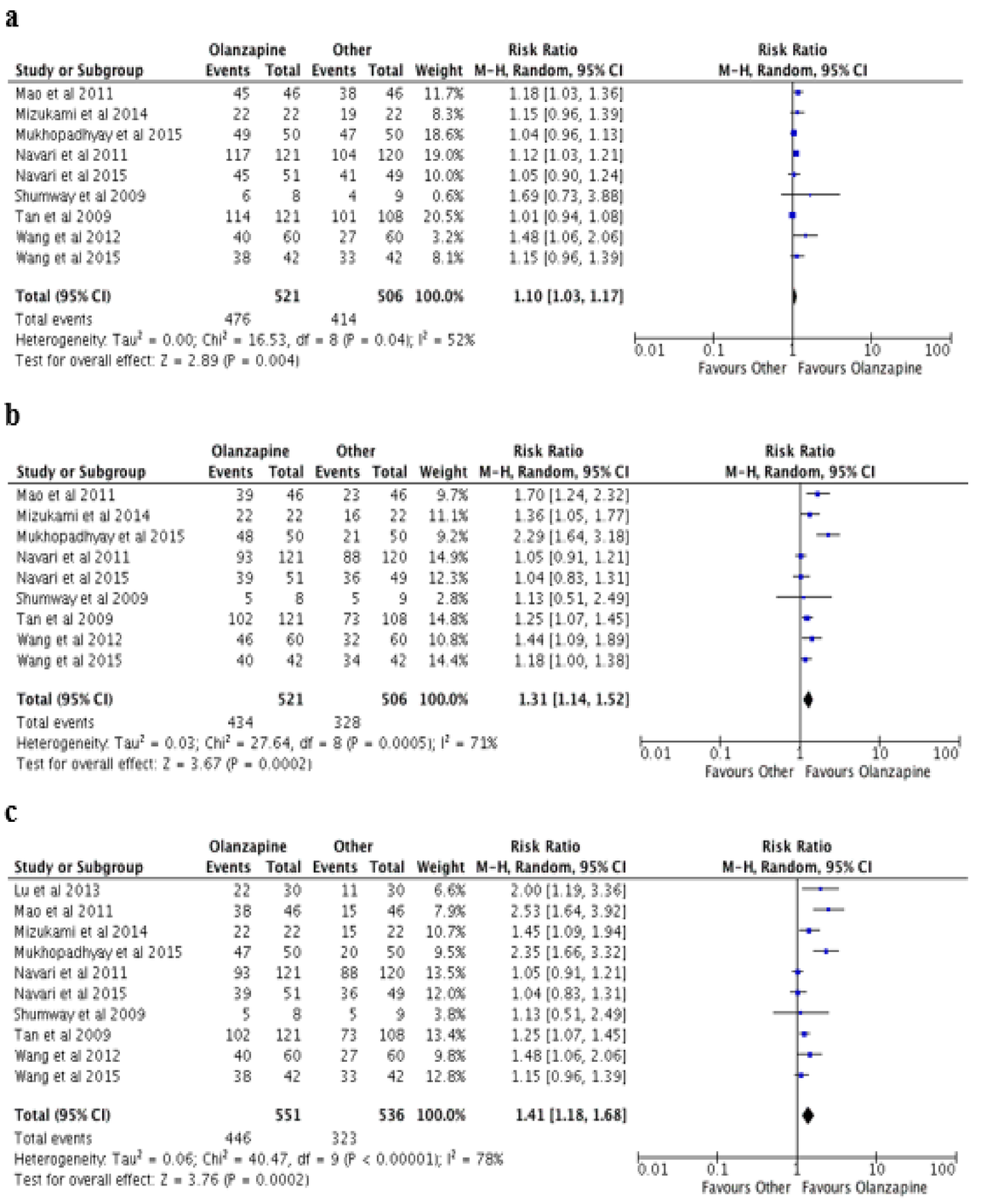

Fig. 1 a Efficacy of olanzapine compared with other standard antiemetics in the prophylaxis of chemotherapy-induced nausea and vomiting—no emesis in the acute phase **b** No emesis in the delayed phase **c** No emesis in the overall phase

Absolute risk difference between olanzapine and other antiemetic intervention arms for all included chemotherapy-induced nausea and vomiting endpoints

Endpoint	Absolute risk difference (%)	95% confidence interval (%)	Test for overall effect	Heterogeneity test	Satisfies MASCC/ESMO antiemetic guidelines requirement
No emesis, acute phase (prevention)	9	4-14	p=0.0007	p=0.08	Approaching
No emesis, delayed phase (prevention)	21	10-33	p=0.0003	p<0.00001	Yes
No emesis, overall phase (prevention)	24	12-36	p=0.0001	p<0.00001	Yes
No nausea, acute phase (prevention)	4	0-9	p=0.06	p=0.64	No
No nausea, delayed phase (prevention)	24	13-35	p<0.0001	p=0.06	Yes
No nausea, overall phase (prevention)	24	14-35	p<0.0001	p=0.07	Yes
No emesis (breakthrough)	36	25-46	p<0.00001	p=0.74	Yes

Endpoint	Absolute risk difference (%)	95% confidence interval (%)	Test for overall effect	Heterogeneity test	Satisfies MASCC/ESMO antiemetic guidelines requirement
No emesis, overall phase (5 mg)	34	19-49	p<0.0001	p=0.75	Yes
No emesis, acute phase (10 mg)	7	3-14	p=0.002	p=0.07	No
No emesis, delayed phase (10 mg)	20	8-33	p=0.002	p<0.00001	Yes
No emesis, overall phase (10 mg)	22	8-36	p=0.003	p<0.00001	Yes
No nausea, acute phase (10 mg)	4	0-9	p=0.06	p=0.64	No
No nausea, delayed phase (10 mg)	24	13-35	p<0.0001	p=0.06	Yes
No nausea, overall phase (10 mg)	24	14-35	p<0.0001	p=0.07	Yes
No emesis, acute phase (Dex)	7	2-12	p=0.004	p=0.16	No
No emesis, delayed phase (Dex)	22	7-37	p=0.005	p<0.00001	Yes
No emesis, overall phase (Dex)	26	11-41	p=0.0009	p<0.00001	Yes
No nausea, acute phase (Dex)	4	-1-9	p=0.09	p=0.47	No
No nausea, delayed phase (Dex)	30	22-38	p<0.00001	p=0.73	Yes
No nausea, overall phase (Dex)	31	23-38	p<0.00001	p=0.71	Yes
No emesis, acute phase (No Dex)	16	5-28	p=0.006	p=0.39	Yes
No emesis, delayed phase (No Dex)	18	7-28	p=0.0008	p=0.37	Yes
No emesis, overall phase (No Dex)	16	5-28	p=0.006	p=0.39	Yes

Conclusions

- In regimens where dexamethasone was not included, olanzapine was not statistically superior to non-olanzapine regiments in two of the three analysed parameters – no emesis in the acute and overall phase
  - The observation that olanzapine is superior in all three parameters in the presence of dexamethasone may mean that some of the increased efficacy should be attributed to dexamethasone
- Olanzapine was found to be statistically and clinically superior to other breakthrough medications such as prochlorperazine and metochlopramide in the only assessable endpoint – no emesis
- Olanzapine is more efficacious than other standard antiemetics in the preventative and breakthrough setting
- We recommend the consideration of the use of a 5-mg dose of olanzapine in the prophylaxis of CINV as analysis shows that a 5-mg dose is equally efficacious to a 10-mg dose but may carry an added safety benefit

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