

**Neoadjuvant PD-1/PD-L1 combined with CTLA-4 inhibitors for solid malignancies: A systematic review and meta-analysis**

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## *Supplementary Material*

### Supplementary Table

**Table S1.** Search results of electronic database and manual method.

Database or website	Strategy of searching	Latest retrieval time	Records
Web of Science	(((((TS=("programmed death 1")) OR TS=("pd-1")) OR TS=("programmed death 1 ligand 1")) OR TS=("pd-11")) OR TS=(immunotherapy)) OR TS=(nivolumab)) OR TS=(pembrolizumab)) OR TS=(toripalimab)) OR TS=(camrelizumab)) OR TS=(durvalumab)) OR TS=(avelumab)) OR TS=(atezolizumab)) OR TS=(tremelimumab)) OR TS=(ipilimumab) AND ((TS=(neoadjuvant)) OR TS=(presurgical)) OR TS=(preoperative) AND (TS=(RCT )) OR TS=(randomized controlled trial)	March 17, 2023	374
PubMed	(PD-1 OR PD-L1 OR CTLA-4 OR immunotherapy OR nivolumab OR pembrolizumab OR toripalimab OR camrelizumab OR durvalumab OR avelumab OR atezolizumab OR tremelimumab OR ipilimumab) AND (neoadjuvant OR presurgical OR preoperative OR perioperative) AND (cancer or carcinoma) AND (RCT OR (randomized controlled trial))	March 17, 2023	322
Embase	('programmed death 1 receptor'/exp OR 'programmed death 1 ligand 1'/exp OR 'pd-1' OR 'pd-11' OR 'ctla-4' OR 'immunotherapy' OR 'nivolumab' OR 'pembrolizumab' OR 'toripalimab' OR 'camrelizumab' OR 'durvalumab' OR 'avelumab' OR 'atezolizumab' OR 'tremelimumab' OR 'ipilimumab') AND ('neoadjuvant' OR 'presurgical' OR 'preoperative' OR 'perioperative') AND ('cancer' OR 'carcinoma') AND ('rct' OR 'randomized controlled trial')	March 17, 2023	1394
Cochrane Library	(PD-1 OR PD-L1 OR CTLA-4 OR immunotherapy) AND (neoadjuvant OR presurgical OR preoperative OR perioperative) AND (cancer or carcinoma) AND (RCT OR (randomized controlled trial)) in Title Abstract Keyword	March 17, 2023	690
Clinical tral.gov	((PD-1 OR PD-L1 OR CTLA-4 OR immunotherapy) AND (neoadjuvant) in Other Terms	March 17, 2023	NA
ASCO	(PD-1 OR PD-L1 OR CTLA-4 OR immunotherapy) AND (neoadjuvant OR presurgical OR preoperative OR perioperative) AND (cancer or carcinoma) AND (RCT OR (randomized controlled trial))	March 17, 2023	NA
ESMO	(PD-1 OR PD-L1 OR CTLA-4 OR immunotherapy) AND (neoadjuvant OR presurgical OR preoperative OR perioperative) AND (cancer or carcinoma) AND (RCT OR (randomized controlled trial))	March 17, 2023	NA
References of included studies	NA	NA	NA

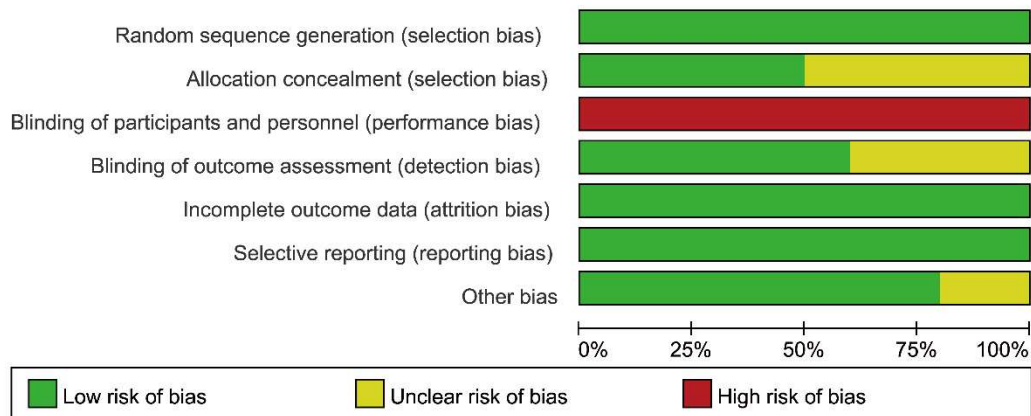
Abbreviation: NA, not applicable.

## Supplementary Figures

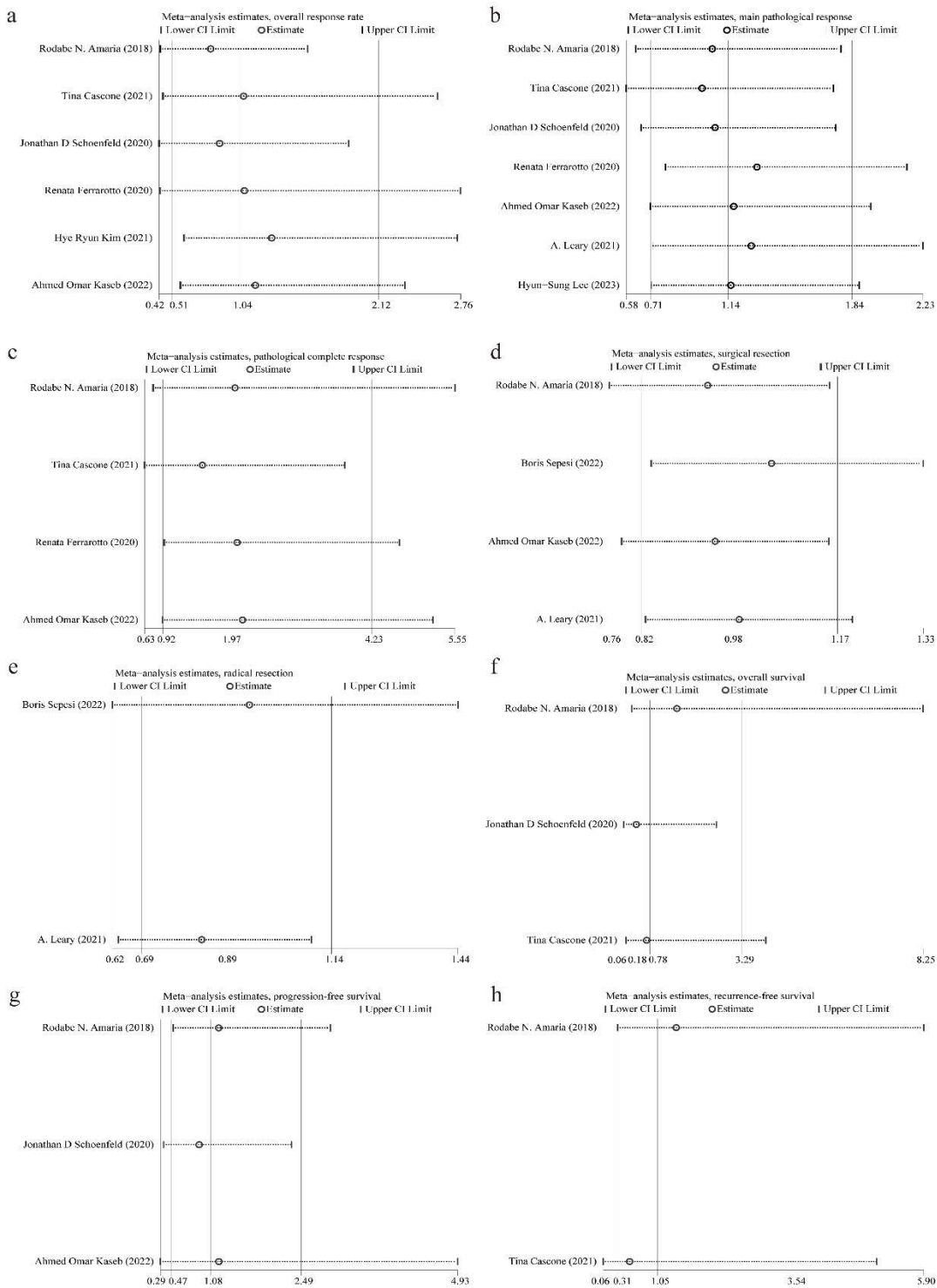
a

Study	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other bias
A. Leary 2021	+	?	-	+	+	+	?
Ahmed Omar Kaseb 2022	+	+	-	+	+	+	+
Boris Sepesi 2022	+	?	-	?	+	+	+
Hye Ryun Kim 2021	+	?	-	?	+	+	+
Hyun-Sung Lee 2023	+	?	-	?	+	+	?
Jonathan D Schoenfeld 2020	+	+	-	+	+	+	+
Jonathan D Schoenfeld 2022	+	+	-	+	+	+	+
Renata Ferrarotto 2020	+	+	-	?	+	+	+
Rodabe N. Amaria 2018	+	+	-	+	+	+	+
Tina Cascone 2021	+	?	-	+	+	+	+

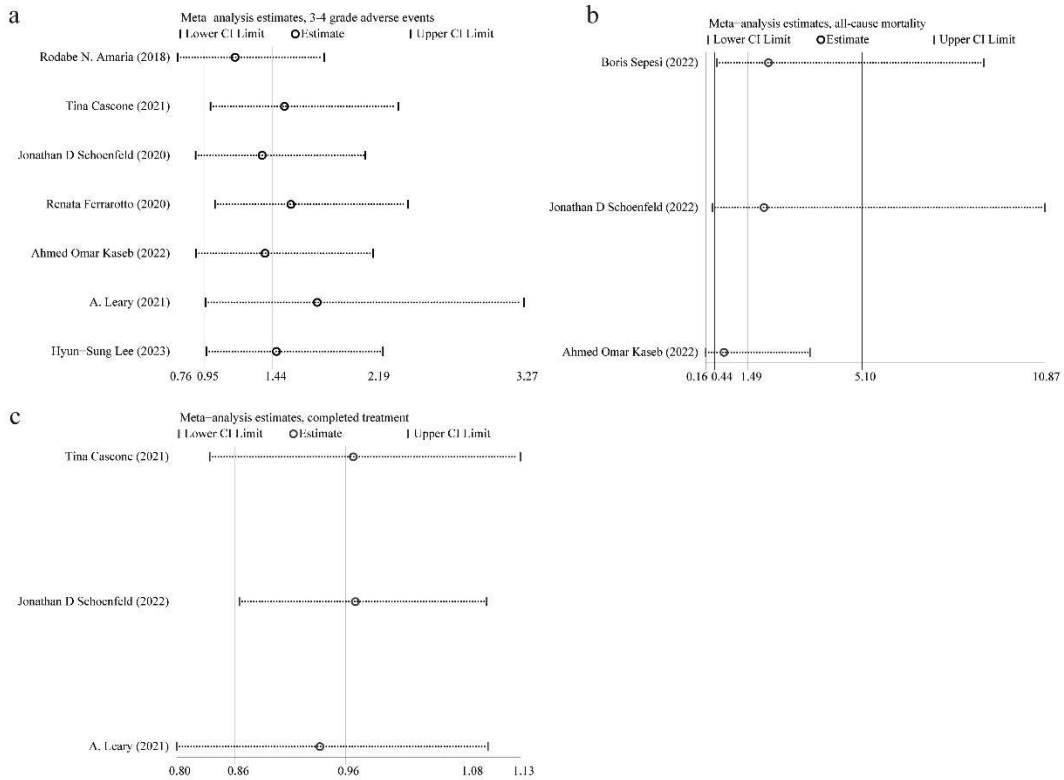
b



**Fig. S1:** Risk bias of the included studies. (a) each risk of bias item for included studies. (b) A summary table for each risk of bias item for each study.



**Fig. S2:** Sensitivity analyses of efficacy outcomes. (a) Sensitivity analysis of overall response rate (ORR). (b) Sensitivity analysis of main pathological response (MPR). (c) Sensitivity analysis of pathological complete response (pCR). (d) Sensitivity analysis of surgical resection. (e) Sensitivity analysis of residual 0 resection (R0). (f) Sensitivity analysis of overall survival (OS). (g) Sensitivity analysis of progression-free survival (PFS). (h) Sensitivity analysis of recurrence-free survival (RFS).



**Fig. S3:** Sensitivity analyses of safety outcomes. (a) Sensitivity analysis of grade 3-4 adverse events. (b) Sensitivity analysis of all-cause mortality. (c) Sensitivity analysis of completed treatment.