

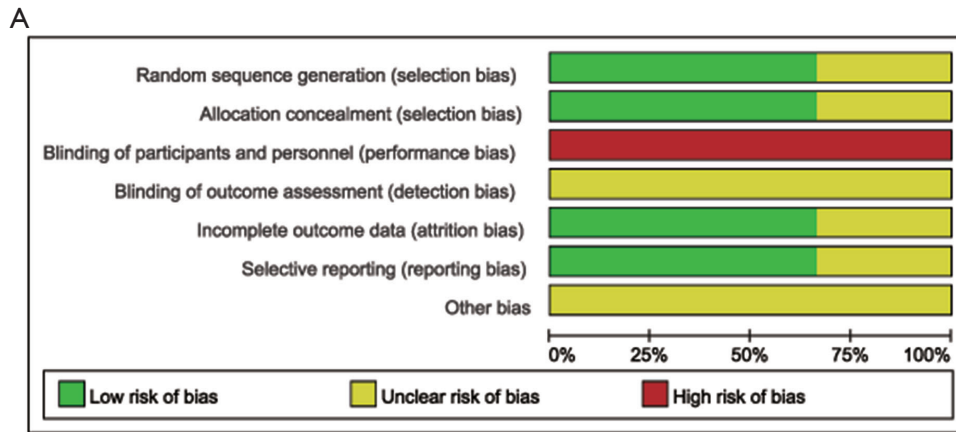
**Table S1** Searching strategy of database

Database	Strategy
Pubmed	((local therapy[Title/Abstract] OR surgery[Title/Abstract] OR resection[Title/Abstract] OR stereotactic body radiotherapy[Title/Abstract] OR SBRT[Title/Abstract] OR radio frequency[Title/Abstract] OR stereotactic ablation body radiation[Title/Abstract] OR radio therapy[Title/Abstract] OR radiation[Title/Abstract]) AND (systemic therapy[Title/Abstract] OR chemotherapy[Title/Abstract] OR tyrosine kinase Inhibitor[Title/Abstract] OR immunotherapy[Title/Abstract] OR TKI[Title/Abstract] OR PD1[Title/Abstract] OR PDL1[Title/Abstract])) AND (stage IV[Title/Abstract] OR advanced[Title/Abstract] OR oligometasta*[Title/Abstract] OR metasta*[Title/Abstract])) AND (NSCLC[Title/Abstract] OR non-small cell lung cancer[Title/Abstract] OR non small cell lung cancer[Title/Abstract] OR non-small-cell lung cancer[Title/Abstract])
Web of knowledge	((local therapy OR surgery OR resection OR stereotactic body radiotherapy OR SBRT OR radio frequency OR stereotactic ablation body radiation OR radio therapy OR radiation) AND (systemic therapy OR chemotherapy OR tyrosine kinase Inhibitor OR immunotherapy OR TKI OR PD1 OR PDL1) AND (stage IV OR advanced OR oligometasta* OR metasta*)) AND (NSCLC OR non-small cell lung cancer OR non small cell lung cancer OR non-small-cell lung cancer)
Embase	('local therapy':ab,ti OR surgery:ab,ti OR resection:ab,ti OR 'stereotactic body radiotherapy':ab,ti OR sbprt:ab,ti OR 'radio frequency':ab,ti OR 'stereotactic ablation body radiation':ab,ti OR 'radio therapy':ab,ti OR radiation:ab,ti) AND ('systemic therapy':ab,ti OR chemotherapy:ab,ti OR 'tyrosine kinase inhibitor':ab,ti OR immunotherapy:ab,ti OR tki:ab,ti OR pd1:ab,ti OR pdl1:ab,ti) AND ('stage iv':ab,ti OR advanced:ab,ti OR oligometasta*:ab,ti OR metasta*:ab,ti) AND (nsccl:ab,ti OR 'non-small cell lung cancer':ab,ti OR 'non small cell lung cancer':ab,ti OR 'non-small-cell lung cancer':ab,ti)
Time interval	2001.1.1-2020.12.31

**Table S2** Clinical thoracic stage of patients included

Study	Intervention	TX	T1	T2	T3	T4	N0	N1	N2	N3
Gray 2014	LT		/	/	/	/	/	/	/	/
	ST		/	/	/	/	/	/	/	/
Xanthopoulos 2015	LT		/	/	/	/	/	/	/	/
	ST		/	/	/	/	/	/	/	/
Johnson 2016	LT	0	9	7	5	1	17	5	0	0
	ST	2	2	4	4	1	0	0	13	0
Huang 2017	LT		/	/	/	/	1	2	7	0
	ST		/	/	/	/	0	0	12	0
Iyengar 2018	LT		/	/	/	/	5	1	6	2
	ST		/	/	/	/	5	3	6	1
Xu 2018	LT		40		11		38		13	
	ST		14		25		19		20	
Gomez 2019	LT		/	/	/	/	12		11	
	ST		/	/	/	/	13		13	
Wang 2020	LT		/	/	/	/	/	/	/	/
	ST		/	/	/	/	/	/	/	/

LT, local aggressive lung therapy; ST, systemic therapy.



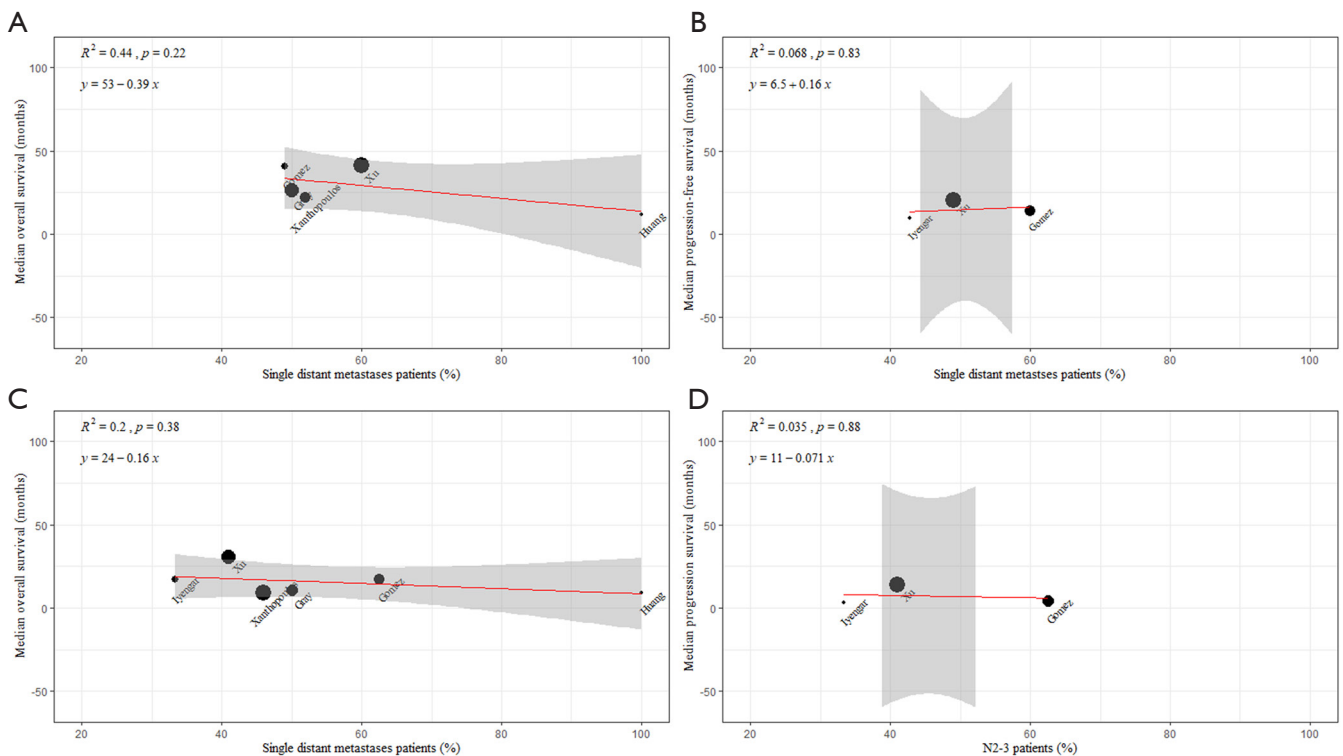
B

	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
Gomez 2019	+	+	-	?	+	+	?
Iyengar 2018	+	+	-	?	+	+	?
Wang 2020	?	?	-	?	?	?	?

**Figure S1** Risk bias table of randomized controlled trials. (A) Bias item presented as percentages; (B) judgements about each risk of bias item.

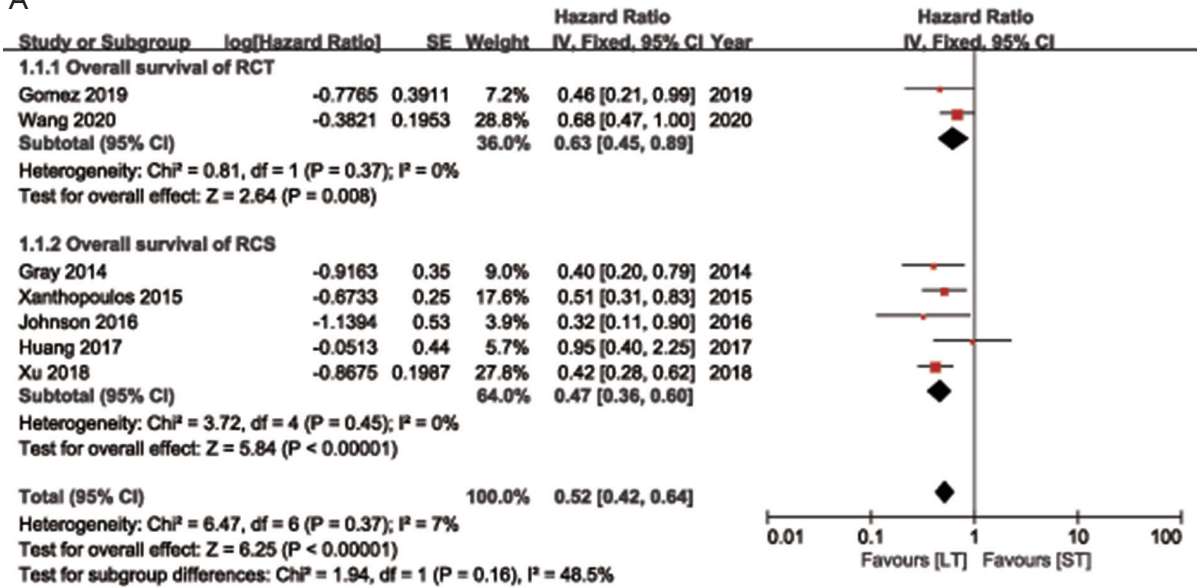
**Table S3** Newcastle-Ottawa Scale of retrospective studies included

Study	New Ottawa Scale			
	Selection	Comparativity	Results	Total
Gray 2014	3	0	2	5
Xanthopoulos 2015	3	0	2	5
Johnson 2016	2	0	2	4
Huang 2016	3	0	2	5
Xu 2018	3	0	3	6

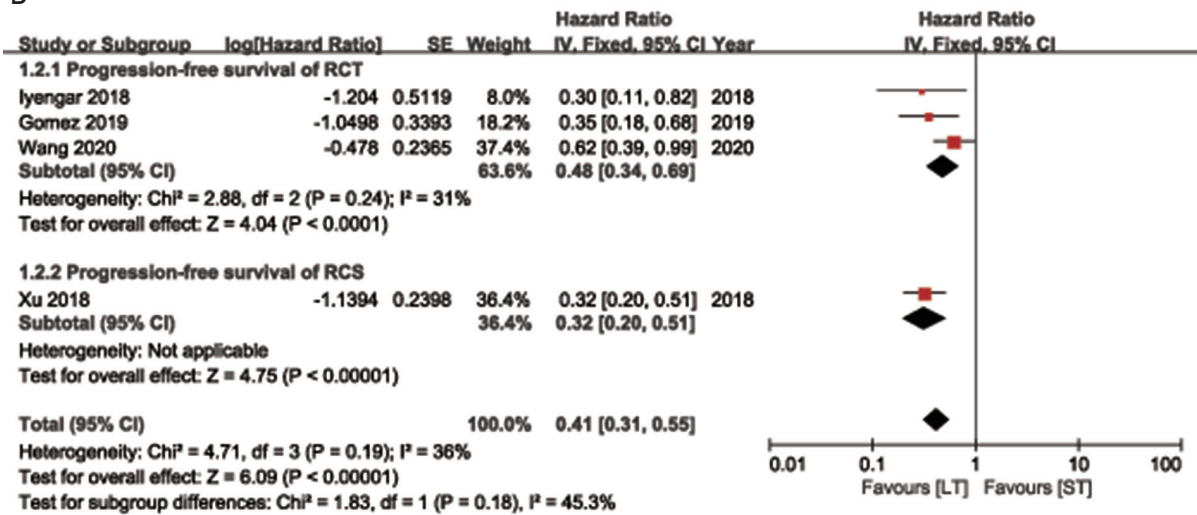


**Figure S2** Correlation between single distant lesion status and median survival time by linear regression analysis. (A) Single distant lesion status and median OS in LT group; (B) single distant lesion status and median OS in ST group; (C) single distant lesion status and median PFS in LT group; (D) single distant lesion status and median PFS in ST group; LT, local aggressive lung therapy; ST, systemic therapy; OS, overall survival; PFS, progression-free survival.

A



B



**Figure S3** Subgroup analysis of included studies stratified by study type (randomized controlled trials or retrospective cohort studies). (A) Progression-free survival; (B) overall survival.

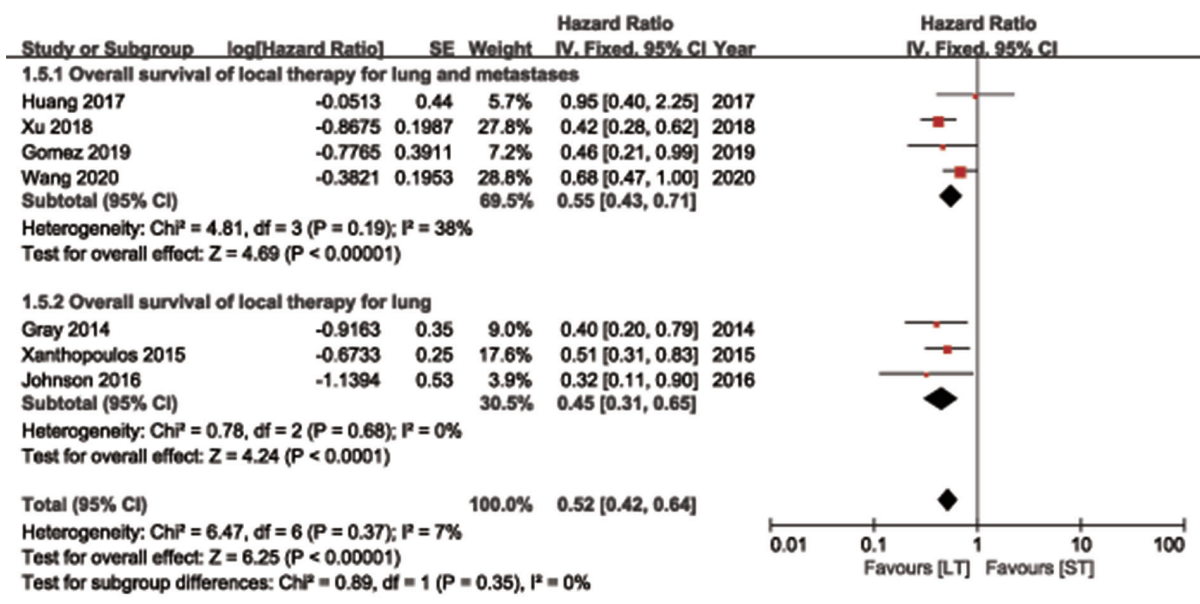


Figure S4 Subgroup overall survival analysis of included studies stratified by local aggressive lung therapy sites (lung only or both lung and metastases).

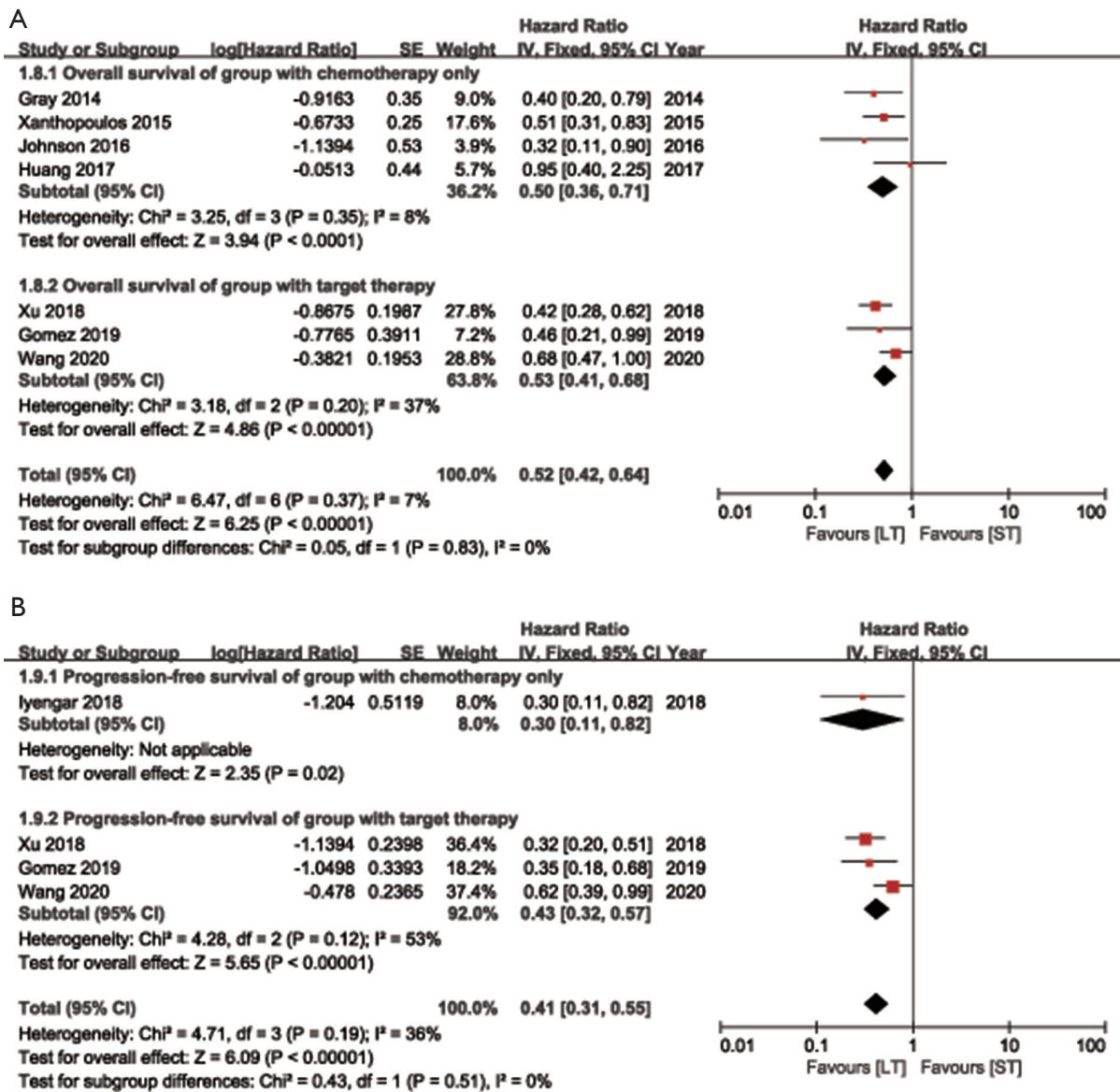


Figure S5 Subgroup analysis of included studies stratified by systemic therapy regimens (chemotherapy alone or targeted therapy); (A) progression-free survival; (B) overall survival.

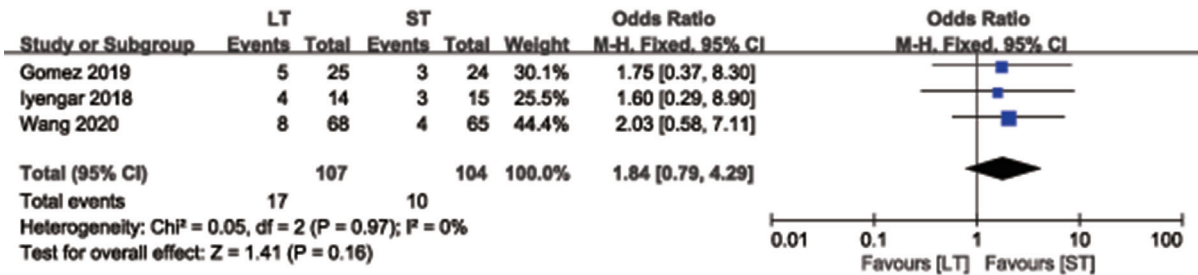


Figure S6 Forest plot of merged odds ratio of adverse effects between local aggressive lung therapy and systemic therapy groups.

**Table S4** Adverse effects reported in local therapy and systemic therapy groups

Study and event	Local therapy		Systemic therapy	
	Grade 1-2	≥Grade 3	Grade 1-2	≥Grade 3
Iyengar 2018				
Gastrointestinal	6		6	
Hematologic	4	1 (7.1%)	6	2 (13.4%)
Infectious		1 (7.1%)		1 (6.7%)
Respiratory	2	2 (14.2%)	5	
Skin	1			
NOS <sup>†</sup>	5		7	
Gomez 2019				
Creatinine			1 (4.2%)	
Fatigue			1 (4.2%)	1 (4.2%)
Anemia		1 (4.0%)		1 (4.2%)
Extremity edema				1 (4.2%)
Esophagitis	1	2 (8.0%)		
Rib fracture		1 (4.0%)		
Wang 2020				
Pneumonitis	NA	5 (7.3%)	NA	2 (2.9%)
Esophagitis	NA	3 (4.4%)	NA	2 (3.0%)

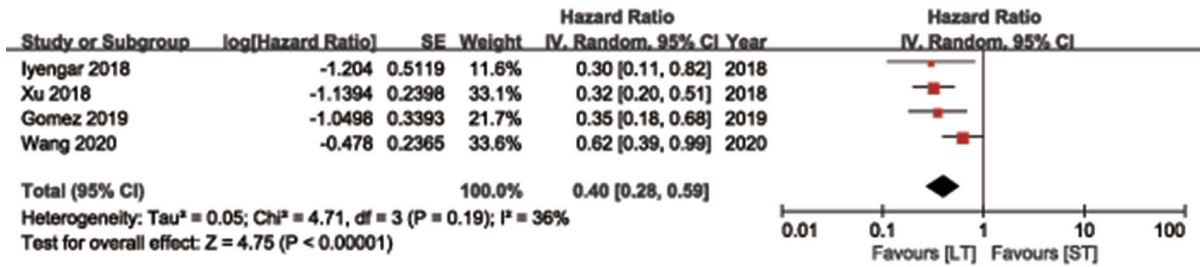
NA, not applicable; NOS is not defined in original study.

**Table S5** Adverse effects reported in local therapy group

Study and event	Addition of local therapy	
	Grade 1-2	≥Grade 3
Xanthopoulos 2015		
Pneumonitis	14%	14%
Esophagitis	24%	21%
Xu 2018		
Pneumonitis	NA	7.7%
Esophagitis	NA	16.9%

NA, not applicable.

A



B

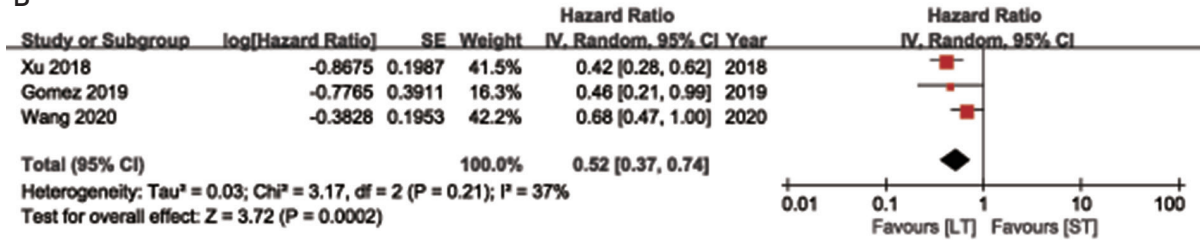


Figure S7 Sensitivity analysis by excluding low quality retrospective cohort studies. (A) Progression-free survival; (B) overall survival.