

补充材料 1: meta 分析的具体检索策略

#1 ("Colorectal Neoplasms"[Mesh]) OR (((((Neoplasm, Colorectal[Title/Abstract])
OR Colorectal Tumor[Title/Abstract]) OR Tumor, Colorectal[Title/Abstract]) OR
Colorectal Carcinoma[Title/Abstract]) OR Colorectal Cancer[Title/Abstract])

#2 ("Carcinoembryonic Antigen"[Mesh]) OR (((Antigen,
Carcinoembryonic[Title/Abstract]) OR CD66e Antigen[Title/Abstract]) OR Antigen,
CD66e[Title/Abstract])

#3 ("CA-19-9 Antigen"[Mesh]) OR (((((Antigen, CA-19-9[Title/Abstract]) OR CA 19
9 Antigen[Title/Abstract]) OR CA 19.9 Antigen[Title/Abstract]) OR Gastrointestinal
Cancer Antigen[Title/Abstract]) OR CA 19-9 Antigen[Title/Abstract])

#4 (CA-242 antigen[Title/Abstract]) OR "CA 242 antigen" [Supplementary Concept]

#5 #1 AND #2 AND #3 AND #4

表 4 单个肿瘤标志物的配对比较

单个肿瘤标志物	Sensitivity	Specificity	PLR	NLR	DOR	AUC
CEA	0.50[0.46,0.55]	0.93[0.90,0.95]	7.3[5.1,10.6]	0.53[0.49,0.58]	14[9,21]	0.73[0.68,0.76]
CA19-9	0.37[0.32,0.43]	0.93[0.91,0.95]	5.4[4.2,7.0]	0.67[0.62,0.73]	8[6,11]	0.82[0.78,0.85]
CA-242	0.41[0.33,0.49]	0.95[0.93,0.96]	8.0[5.6,11.4]	0.62[0.55,0.71]	13[8,20]	0.87[0.83,0.89]
CEA vs CA-199	^a P<0.05	P>0.05	NA	NA	NA	^b P<0.05
CEA vs CA-242	P>0.05	P>0.05	NA	NA	NA	^c P<0.05
CA-199 vs CA242	P>0.05	P>0.05	NA	NA	NA	p>0.05

PLR:阳性似然比; NLR: 阴性似然比; DOR:诊断比值比; AUC:曲线下面积; NA:未提及.

Z 检验

表 5 肿瘤标志物联合检测的配对比较

肿瘤标志物组合	Sensitivity	Specificity	PLR	NLR	DOR	AUC
CEA+CA19-9	0.67[0.61,0.72]	0.88[0.83,0.92]	5.6[4.0,7.9]	0.37[0.32,0.44]	15[10,23]	0.88[0.85,0.91]
CEA+CA242	0.67[0.60,0.73]	0.88[0.83,0.91]	5.5[4.1,7.4]	0.38[0.31,0.46]	15[10,20]	0.86[0.83,0.89]
CA19-9+CA242	0.63[0.57,0.69]	0.88[0.84,0.92]	5.4[3.9,7.5]	0.42[0.36,0.50]	13[8,20]	0.89[0.86,0.91]
CEA+CA19-9+CA242	0.79[0.75,0.83]	0.86[0.83,0.89]	5.7[4.5,7.3]	0.24[0.19,0.29]	24[17,35]	0.89[0.86,0.91]
CEA+CA19-9 vs CEA+CA242	P>0.05	P>0.05	NA	NA	NA	P>0.05
CEA+CA19-9 vs CA19-9+CA242	P>0.05	P>0.05	NA	NA	NA	P>0.05
CEA+CA19-9 vs CEA+CA19-9+CA242	^a P<0.05	P>0.05	NA	NA	NA	P>0.05
CEA+CA242 vs CA19-9+CA242	P>0.05	P>0.05	NA	NA	NA	P>0.05
CEA+CA242 vs CEA+CA19-9+CA242	^b P<0.05	P>0.05	NA	NA	NA	P>0.05
CA19-9+CA242 vs CEA+CA19-9+CA242	^c P<0.05	P>0.05	NA	NA	NA	P>0.05

PLR:阳性似然比; NLR: 阴性似然比; DOR:诊断比值比; AUC:曲线下面积; NA:未提及. Z 检验

表 6 CEA 的亚组分析和 meta 回归

变量	分类	研究个数	亚组分析		Meta 回归	
			Sensitivity(95%CI)	Specificity(95%CI)	LRTChi ²	P
研究人数	≥200	7	0.45[0.42,0.49]	0.95[0.93,0.97]	7.98	0.02
	<200	11	0.54[0.48,0.60]	0.90[0.85,0.94]		
对照组	包含良性疾病	6	0.46[0.41,0.51]	0.92[0.87,0.95]	3.76	0.15
	不包含良性疾病	12	0.53[0.47,0.58]	0.94[0.90,0.97]		
临界值	=5	12	0.50[0.44,0.55]	0.92[0.87,0.95]	2.94	0.23
	≠5	6	0.53[0.48,0.57]	0.95[0.92,0.97]		
检测方法	RIA	2	0.63[0.50,0.75]	0.95[0.89,0.98]	NA	NA
	CLIA	7	0.50[0.46,0.54]	0.91[0.84,0.95]		
	ECLI	3	0.59[0.50,0.68]	0.88[0.84,0.91]		
	PC	5	0.42[0.39,0.46]	0.95[0.92,0.98]		
	ELISA	1	0.53[0.45,0.62]	0.96[0.93,0.99]		

CLIA:化学发光免疫分析法; ECLI: 电化学发光免疫分析法; ELISA:酶联免疫法; RIA:放射免疫法; PC: 蛋白芯片法

表 7 CA 19-9 的亚组分析和 meta 回归

变量	分类	研究个数	亚组分析		Meta 回归	
			Sensitivity(95%CI)	Specificity(95%CI)	LRTChi ²	P
研究人数	≥200	7	0.30[0.24,0.37]	0.94[0.92,0.96]	7.35	0.03
	<200	11	0.43[0.37,0.49]	0.92[0.89,0.95]		
对照组	包含良性疾病	6	0.35[0.28,0.44]	0.93[0.89,0.95]	0.67	0.71
	不包含良性疾病	12	0.38[0.32,0.45]	0.93[0.91,0.95]		
临界值	=35	9	0.42[0.38,0.47]	0.92[0.89,0.95]	3.52	0.17
	≠35	9	0.33[0.26,0.41]	0.94[0.91,0.96]		
检测方法	RIA	2	NA	NA	NA	NA
	CLIA	7	0.45[0.40,0.51]	0.92[0.88,0.95]		
	ECLI	3	0.40[0.32,0.47]	0.91[0.87,0.94]		
	PC	5	0.25[0.21,0.29]	0.95[0.91,0.97]		
	ELISA	1	0.33[0.25,0.41]	0.93[0.88,0.96]		

CLIA:化学发光免疫分析法; ECLI: 电化学发光免疫分析法; ELISA:酶联免疫法; RIA:放射免疫法; PC: 蛋白芯片法

表 8 CA242 的亚组分析和 meta 回归

变量	分类	研究个数	亚组分析		Meta 回归	
			Sensitivity(95%CI)	Specificity(95%CI)	LRTChi ²	P
研究人数	≥200	7	0.34[0.24,0.45]	0.96[0.94,0.98]	3.30	0.19
	<200	11	0.46[0.35,0.56]	0.94[0.90,0.96]		
对照组	包含良性疾病	6	0.34[0.24,0.44]	0.94[0.90,0.97]	2.81	0.25
	不包含良性疾病	12	0.45[0.34,0.55]	0.95[0.92,0.97]		
临界值	=20	12	0.34[0.26,0.42]	0.95[0.93,0.97]	7.67	0.02
	≠20	6	0.56[0.47,0.64]	0.93[0.89,0.96]		
检测方法	RIA	3	0.59[0.51,0.67]	0.98[0.95,0.99]	NA	NA
	CLIA	6	0.46[0.35,0.58]	0.94[0.89,0.96]		
	ECLI	3	0.36[0.24,0.49]	0.91[0.88,0.94]		
	PC	5	0.25[0.21,0.29]	0.97[0.94,0.99]		
	ELISA	1	0.58[0.50,0.66]	0.89[0.84,0.93]		

CLIA:化学发光免疫分析法; ECLI: 电化学发光免疫分析法; ELISA:酶联免疫法; RIA:放射免疫法; PC: 蛋白芯片法