The ARRIVE Guidelines Checklist

FOXQ1 promotes invasion and metastasis in colorectal cancer by activating HB-EGF/EGFR pathway

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	ITEM	RECOMMENDATION	Reported on page #
Title	1	FOXQ1 promotes invasion and metastasis in colorectal cancer by activating HB-EGF/EGFR pathway	1
Abstract	2	See the article for details	3
INTRODUCTION			
Background	3	Colorectal cancer (CRC) is an extremely malignant tumor with a high mortality rate. Little is known about the mechanism by which Forkhead Box Q1 (FOXQ1) causes CRC invasion and metastasis through the EGFR pathway.	2
Objectives	4	To illuminate the mechanism that FOXQ1 promotes the invasion and metastasis of CRC by activating the HB-EGF/EGFR pathway.	2
METHODS			
Ethical statement	5	Our research don ' t conduct in vivo experiments on any animals, and don ' t involve any human subjects	
Study design	6	a. Construction of FOXQ1 knockout CRC cell line b. Screen out factors related to FOXQ1 knockout through EGF/PDGF gene chip. c. To study the effect of FOXQ1 expression on HB-EGF expression and extracellular release ability in CRC cells. d. Determine that FOXQ1 regulates EGFR and downstream pathways by regulating HB-EGF. e. Through proliferation, migration and invasion experiments confirm that FOXQ1 affects the process of CRC through HB-EGF.	2-4
Experimental procedures	7	f. Study the prognostic effects of FOXQ1 and HB-EGF a. Cell cultures b. Plasmid construction and transfection c. Flow cytometry d. Western blotting e. RNA isolation and quantitative real-time PCR (qRT－PCR) f. EGF/PDGF pathway cDNA array assay g. ELISA h. Cell proliferation,cell migration and wound-healing assay i. CRC tissue microarray	6-11
Statistical methods	8	Statistical analyses were performed using GraphPad Prism 8 and SPSS v.19. An unpaired two-tailed Student ' s t-test was performed for two-group comparisons, and one-way analysis of variance (ANOVA) was performed for multiple group comparisons. Survival curves were calculated using the Kaplan－Meier algorithm and log-rank test. aP<0.05 was considered to indicate a statistically significant difference.	11

RESULS			
Outcomes and estimation	9	a. the essential role of FOXQ1- induced Invasion and metastasis in CRC is related to activate the HB-EGF/EGFR pathway. b. FOXQ1 can regulate the expression of HB-EGF, an important ligand of EGFR, thereby regulating the expression of multiple important node genes in the EGFR signaling pathway. c. clinical significance between FOXQ1 and HB-EGF is closely associated with a lower 8-year survival in CRC patients. d. FOXQ1 may serve as a therapeutic target for CRC treatment by inhibiting the HB-EGF/EGFR pathway.	11-15
DISCUSSION			
Interpretation/ scientific implications	10.	a. This indirect regulation needs to be further verified in other CRC cell lines b. No verification of FOXQ1 overexpressing cells	12
Generalisability/ translation	11	a. FOXQ1 may serve as a therapeutic target for CRC treatment by inhibiting the HB-EGF/EGFR pathway. b.These findings suggests that the expression of FOXQ1 and its coregulatory protein, HB-EGF, may have a prognostic correlation with colorectal cancer.	19
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