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论著

低氧诱导因子1α诱导卵巢癌细胞周期阻滞的研究

黄磊[1],敖启林[2],李芳[1],邢辉[1],卢运萍[1],廖国宁[1],马丁[1]

华中科技大学同济医学院1附属同济医院肿瘤生物医学中心,2病理系， 湖北 武汉 430030

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摘要 目的：探讨低氧诱导因子1α（HIF-1α）对卵巢癌细胞周期的阻滞作用。方法: 采用化学性低氧诱导剂氯化钴（CoCl2）和物理性低氧培养箱两种方法对体外培养的卵巢癌SW626细胞诱导低氧，用诱骗法（decoy）阻断HIF-1α功能，Western blotting、RT-PCR和流式细胞术分别检测HIF-1α蛋白、mRNA的表达水平和细胞周期比率。结果： B1组(3.75±1.31)和C1组(3.48±1.01) HIF-1α蛋白表达水平明显高于A1组(0.97±0.31)（P<0.05), decoy法对HIF-1α蛋白表达没有明显影响(P>0.05)；A1组（0.65±0.32）和B1组（0.64±0.34）HIF-1α mRNA表达水平明显低于C1组（1.28±0.62）（P<0.05），decoy法对HIF-1α mRNA 表达没有明显影响（P>0.05）；流式细胞术检测发现B1组（81.78±24.33）和C1组（77.62±22.76）G0/G1期细胞比率显著高于A1组（49.49±18.54）（P<0.05）；B2组（61.54±20.84）明显低于B1组（P<0.05），C2组明显低于C1组（56.03±21.42），而A1组和A2组之间无明显差异（P>0.05）。结论：CoCl2或物理性低氧均能明显诱导卵巢癌细胞SW626 G0/G1期细胞周期阻滞和HIF-1α的表达，HIF-1α在低氧引起的卵巢癌细胞SW626的细胞周期阻滞中起重要作用。

关键词 缺氧； 低氧诱导因子-1； 卵巢肿瘤； 细胞周期

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Cell cycle arrest induced by hypoxia inducible factor-1 alpha in SW626 cell line of human ovarian cancer

HUANG Lei[1], AO Qi-lin[2], LI Fang[1], XING Hui[1], LU Yun-ping[1], LIAO Guo-ning[1], MA Ding[1]

1Molecular Cancer Center, Tongji Hospital,2Department of Pathology, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430030, China

Abstract

<FONT face=Verdana>AIM: To investigate the cell cycle arrest induced by hypoxia, hypoxia inducible factor-1 and their possible mechanism in human ovarian cancer cell line SW626. METHODS: CoCl2, a chemical inducer of hypoxia and hypoxic cell culture chamber were used to induce chemical and physical hypoxia in human ovarian cancer cell line SW626. The method of 'decoy' was used to block the function of HIF-1α because it acts as the core sequence of the target gene as a competitor combined to the HIF-1α. The cells were divided into group A1 (normal oxygen), A2 (normal oxygen plus HIF-1α decoy), B1 (CoCl2), B2 (CoCl2 plus HIF-1α decoy), C1 (hypoxia) and C2 (hypoxia plus HIF-1α). The expression of the HIF-1α protein, mRNA and cell cycle analysis were detected by Western blotting, RT-PCR and flow cytometry (FCM). RESULTS: The expression level of HIF-1α protein in group B1 (3.75±1.31) and group C1 (3.48±1.01) was significantly higher than that in group A1 (0.97±0.31) (P<0.05). The expression levels of HIF-1α mRNA in group A1 (0.65±0.32) and group B1 (0.64±0.34) were significantly lower than that in group C1 (1.28±0.62) (P<0.05). Decoy had no effect in the expression of HIF-1α protein and mRNA level (P>0.05). FCM showed that the G0/G1 phase was markedly increased in group B1 (81.78±24.33) and group C1 (77.62±22.76) and was significantly higher than that in group A1 (49.49±18.54) (P<0.05), group B2 (61.54±20.84) was lower than that in group B1 with statistical significance (P<0.05) and group C2 (56.03±21.42) was lower than that in group C1 with statistical significance (P<0.05) , but the difference between group A1 and group A2 (51.77±16.45) had no statistical significance (P>0.05). CONCLUSION: Both CoCl2 and physical hypoxia could distinctly induce cell cycle arrest in G0/G1 phase and the expression of HIF-1α in human ovarian cancer cell line SW626. HIF-1α plays an important role in cell cycle arrest induced by hypoxia in human ovarian cancer cell line SW626. </FONT>

Key words Anoxia； Hypoxia-inducible factor-1 Ovarian neoplasms； Cell cycle

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通讯作者 黄磊 hl8354439@yahoo.com.cn