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Hypoxia promotes multi-drug resistance by regulating SKA1 in osteosarcoma cells

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Drug resistance is always the hardest problem in osteosarcoma treatment. It is believed that hypoxia is the root. The aim of our study was to investigate how hypoxia triggers chemotherapy resistance in osteosarcoma. First, we scanned the hypoxia and normoxia cultured osteosarcoma cells *in silico* and found out the differential expressed gene which related to drug resistance with bioinformatics. This gene was overexpressed by lentivirus vector and real-time PCR and western blot were used to detect the expression of both this gene and drug resistance related genes. We also inoculate the osteosarcoma cells transfected with lentivirus into nude mice and chemotherapy effects were observed. The *in vivo* results showed that HIF-1α was highly expressed (3.66 fold up) in the hypoxia osteosarcoma cells and SKA1 was rather low (3.67 fold down) compared with cells cultured under normoxia condition ($P<0.05$). In addition, mRNA and protein levels of MDR1, MRP2 and GSTP1 in SKA1 overexpressed osteosarcoma cells were decreased than in GFP and NC cells ($P<0.05$). Animal experiments demonstrated that nude mice injected with SKA1 overexpressed osteosarcoma cells bore little tumors when treated with epirubicin compared with mice injected with GFP and NC cells. Taking together, our work suggests that HIF-1α may down-regulate SKA1 which could then increase chemotherapy resistance in human osteosarcoma cells.

Biography

Qiong Ma has her expertise and interest in scientific study on human osteosarcoma, especially about the proliferation, invasion and metastases of tumor cells.

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