FLOT1 is a novel target of ovarian cancer for diagnosis and treatment

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Ovarian cancer (OC) is the most lethal gynecological disease. Flotillin-1 (FLOT1) is a major protein of the component of lipid rafts involved in endocytosis, cell proliferation, cell adhesion, and receptor-mediated signal transduction. However, the role of FLOT1 in OC remains unknown. Current study defined FLOT1 as a novel serum biomarker of OC, improving the diagnostic sensitivity and accuracy, and to determine FLOT1 expression in human ovarian tumors and its effect on OC cell proliferation. FLOT1 protein expression was assessed in a tissue microarray by immunohistochemical staining. We found that most ovarian malignant and borderline tumors were FLOT1 protein positive, whereas ovarian benign tumors and normal tissues were negative. The staining of FLOT1 was stronger in serous malignant tumor and transitional cell carcinoma and weaker in mucinous tumor. The differentially expressed FLOT1 in freshly isolated serous tumors was confirmed by Western blotting. By analysis of histological types, we observed that FLOT1 protein expression was significantly associated with serous tumor. Silencing FLOT1 by FLOT1-siRNA inhibited OC cell proliferation and arrested the cell cycle at S phase. Inhibition of FLOT1 increased cyclin E1 protein expression. Overexpression of FLOT1 partially rescued the FLOT1-shRNA-suppressed cell proliferation. Furthermore, we found that the concentration of serum FLOT1, as well as CA125, was significantly increased in patients with OC measured by ELISA. The combination of FLOT1 and CA125 increased the detection rate and sensitivity of OC. Thus, we demonstrated that FLOT1 is highly expressed in ovarian malignant tumor and is secreted into the serum of patients with OC. The suppression of FLOT1 decreases OC cell proliferation. These data suggests that a novel diagnostic panel of FLOT1 and CA125 may be used as an optimal tool to improve the sensitivity and accuracy of OC diagnosis. Targeting FLOT1 may potentially have a clinical application in the treatment of OC.

Biography

Guoxiong Xu is a Professor of Oncology, Scientist and Director of Center Laboratory at Jinshan Hospital of Fudan University, China. He obtained his MD in the Faculty of Medicine at Shanghai Second Medical University in China; a Master degree in Medical and Pharmaceutical Research at the Free University of Brussels in Belgium and a PhD at York University in Canada. He has worked as a Clinician and Research Scientist at various universities and institutes. He has published more than 70 papers in peer-reviewed journals and has been serving as an Editorial Board Member of many scientific journals.

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