Cancer Stem Cell of Digestive Organs

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Recent studies supported the notion that a small population, which mimics normal adult stem cells in the dormant phase of the cell cycle, plays a role in the biological behaviors of tumors. Indeed such distinct cells, i.e., cancer stem cells are resistant to toxic injuries and chemoradiation therapy in vitro and in vivo. After possible involvement was indicated in leukemia, we were able to report cancer stem cells in gastrointestinal tumors. Our exploration of new screening for surface markers were supposed to be beneficial to identify gastrointestinal cancer stem cells, followed by characterization of chemoresistance and tumorigenicity, indicating that several cell surface markers including CD13/APN play a role in biological function of cancer stem cells. Furthermore, we examined the possible effects of cellular reprogramming by induction or inhibition of cancer-related genes and immature status-related genes including that of induced pluripotent stem (iPS) cell genes, whose alterations have been reported in gastrointestinal cancer cells. Introduction of iPS cell genes but also several microRNAs, including miR302 was necessary for inducing the expression of immature status-related proteins and the possible expression of morphological patterns and showed slow proliferation and were sensitized to differentiation-inducing treatment, and in vivo tumorigenesis was reduced in nonobese diabetic mice with severe combined immunodeficiency. Taken together the present study indicates that the combination of traditional therapies with targeted cancer stem cell-specific agents may target the whole tumors and may offer a promising strategy for lasting treatment and even cure.