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CD133+cancer stem cell-like cells derived from uterine carcinosacroma

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Uterine carcinosarcoma (malignant mixed Müllerian tumor) is a highly aggressive tumor and often show heterologous mesenchymal differentiation, which suggested the probability that they were "a stem cell tumor" of the Müllerian duct. We herein identify and characterize CSCs in human uterine carcinosarcoma(malignant mixed Müllerian tumor), which is one of the most aggressive and therapy-resistant gynecological malignancies and is considered to be of mesodermal origin. The CD133population was increased in uterine carcinosarcoma, and this population showed biphasic properties in the primary tumor. CD133cells predominantly formed spheres in culture and were able to differentiate into mesenchymal lineages. CD133cells were more resistant to cisplatin/paclitaxel-induced cytotoxicity in comparison with CD133cells. A real-time polymerase chain reaction analysis of the genes implicated in stem cell maintenance revealed that CD133cells express significantly higher levels of Oct4, Nanog, Sox2, and Bmi1 than CD133cells. Moreover, CD133cells showed a high expression level of Pax2 and Wnt4, which are genes essential for Müllerian duct formation. These CD133cells form serially transplantable tumors *in vivo* and the resulting CD133tumors replicated the EpCAM, vimentin, and estrogen and progesterone receptor expression of the parent tumor, indicating that CSCs likely differentiated into cells comprising the uterine carcinosarcoma tissue. Moreover, strong CD133 expression in both epithelial and mesenchymal elements in primary tumor demonstrated significant prognostic value. These findings suggest that CD133cells have the characteristics of CSCs and Müllerian mesenchymal progenitors

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