PubMed

Display Settings: Abstract

J Neurooncol. 2011 Sep 6. [Epub ahead of print]

Identification of CD105 (endoglin)-positive stem-like cells in rhabdoid meningioma.

Hu D, Wang X, Mao Y, Zhou L.

Department of Neurosurgery, Huashan Hospital, Fudan University, Shanghai, China.

Abstract

To investigate the tumor-initiating cells (TICs) in rhabdoid meningioma (RM), a population of CD105-positive cells isolated from a fresh RM surgical sample was analyzed for proliferative activity, self-renewal ability, tumorigenic ability, multilineage differentiation potential, as well as chromosomal aberrations. The results showed that isolated CD105-positive cells could be maintained for more than 50 generations in vitro. These cells exhibited increased proliferative activity and single-cell tumor sphere-formation ability compared with CD105-negative cells. In vivo experiments showed that CD105-positive cells possessed much greater potential to reconstitute the original human RM in nude mice as compared with CD105-negative cells. Phenotypically, CD105-positive cells shared some surface markers with mesenchymal progenitor cells (MPCs), but karyotype analysis showed chromosomal abnormalities characteristic of malignant meningioma, thus distinguishing them from supportive stroma-derived MPCs. In addition, in contrast to CD105-negative cells, CD105-positive cells could differentiate into adipocytes and osteocytes in response to specific induction agents. Finally, CD105-positive cells with stem-like features were also isolated from xenograft tumors. In conclusion, a population of CD105-positive TICs with some traits of MPCs was identified in RM and might provide a promising therapeutic target in management of malignant meningioma.

PMID: 21894449 [PubMed - as supplied by publisher]

LinkOut - more resources