

Influence of CD133⁺ expression on patients survival and resistance of CD133⁺ cells to anti-tumor agents in gastric cancer

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Objective: Influence of CD133⁺ expression on patients' survival and resistance of CD133⁺ cells to anti-tumor agents were studied in gastric cancer (GC).

Methods & Results: As revealed by Western blot, the lower CD133⁺ group had a significantly better survival as compared to the higher CD133⁺ group ($P=0.014$). From CD133⁺ subpopulation ($28.0\% \pm 2.0\%$) for KATO-III cells, the highest content ratio among four measured cells lines and cancerous ascites from GC patient, could be enriched following the immunomagnetic separation (IMS) ($91.0\% \pm 3.0\%$) and then at 1 wk of floating culture ($95.0\% \pm 2.0\%$). The population doubling time was 21.0 ± 3.0 h vs. 40.0 ± 8.0 h in CD133⁺ and CD133⁻ cells by CCK-8 assay; respectively ($P<0.05$). As shown, a single CD133⁺ cell was capable of generating new cell colony and the tumorigenicity rate in nude mice was 100.0% (5/5) for CD133⁺ clonal spheres or for CD133⁺ cells, but 0.0% (0/5) for CD133⁻ cells. The significantly higher mRNA level of Oct-4, Sox-2, Musashi-1, and ABCG2 in CD133⁺ clonal spheres could be identified comparing to that in either CD133⁺ cells or in CD133⁻ cells. Under the treatment of 5-FU, cisplatin or VP-16, CD133⁺ cells had significantly lower suppression rates of cell growth in comparison with those in CD133⁻ cells while lower level of Bcl-2 mRNA and higher level of Bax mRNA were simultaneously found in CD133⁺ cells comparing to that in CD133⁻ cells ($P<0.05$).

Conclusions: The patients with lower CD133⁺ expression had a better survival. Enriched CD133⁺ cells in clonal sphere with higher mRNA level of Oct-4, Sox-2, Musashi-1, and ABCG2 shared the ability to be self-renewable, proliferative, tumorigenic and resistant to anti-tumor agent as probably regulated by genetic products of Bcl-2 and Bax.

Biography

Ji-wei Yu has completed her M.D. at the age of 25 years from Shanghai Jiao-tong University School of Medicine and postdoctoral studies for Ph.D. from Shanghai Jiao-tong University School of Medicine. She is the Director of 1st Department of General Surgery. She has published more than 50 papers in reputed journals and is serving as an editorial board member of repute.

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