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***BDH2* is a poor novel independent maker in CN-AML**

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The relevance of recurrent molecular abnormalities in cytogenetically normal (CN) acute myeloid leukemia (AML) was recently acknowledged by the inclusion of molecular markers such as *NPM1*, *FLT3*, and *CEBPA* as a complement to cytogenetic information within both the World Health Organization and the European Leukemia Net classifications. Mitochondrial metabolism is different in cancer and normal cells. A novel cytosolic type 2-hydroxybutyrate dehydrogenase, *BDH2*, originally named DHRS6, plays a physiological role in the cytosolic utilization of ketone bodies, which can subsequently enter mitochondria and the tricarboxylic acid cycle. Moreover, *BDH2* catalyzes the production of 2,3-DHBA during enterobactin biosynthesis and participates in 24p3 (LCN2)-mediated iron transport and apoptosis. We observed that *BDH2* expression is an independent poor prognostic factor for CN-AML, with an anti-apoptotic role. Patients with high *BDH2* expression have relatively shorter overall survival ($P=0.007$) and a low complete response rate ($P=0.032$). *BDH2*-knockdown (*BDH2*-KD) in THP1 and HL60 cells increased the apoptosis rate under reactive oxygen species stimulation. Decrease inducible survivin, a member of the inhibitors of apoptosis family, but not members of the Bcl-2 family, induced apoptosis via a caspase-3-independent pathway upon *BDH2*-KD. Additionally, under cell cycle analysis, surface markers and special stain studies, we noticed that *BDH2*-KD induced differentiation and decreased the growth rate of THP1 cells, which was associated with the retardation of cell cycle. Here, we present a novel gene, *BDH2*, as an independent poor prognostic marker for CN-AML, with the role of anti-apoptosis, through surviving, and the role influence on cell cycle arrest and differentiation.

Biography

Wen-Chi Yang has completed her MD at the age of 25 years from Kaohsiung Medical University and completed her PhD at the age of 38 years from the same University. She did 2 years Postdoctoral studies from Harvard Medical School during 2007 to 2009 and half year Postdoctoral studies from Massachusetts Institute of Technology after then. She is hematology, medical oncology and hospice care specialist in Taiwan. She is the attending physician of Yuan's General Hospital. She is also chief staff of molecular medicine lab in Yuan's general hospital. She is a new research and published some papers in molecular biology and medical fields.

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