



Survivin promoter rs9904341 polymorphism is associated with tumor stage and grade in patients with bladder cancer

PDF (Size: 175KB) PP. 1-5 DOI: 10.4236/abb.2013.41001

Author(s)

Zhon-Min Huang, Yi-Te Chiang, Min-Che Tung, Chia-Chang Wu, Kuan-Chou Chen, Ming-Te Huang, Yuan-Hung Wang, Cheng-Huang Shen

ABSTRACT

Survivin is an inhibitor of apoptosis protein and also plays a important role in the development of several malignancies. To investigate the association between *survivin* promoter – 31 G/C (rs9904341) polymorphism and bladder cancer (BC) risk. A total of 200 pathologically confirmed BC cases and 200 unrelated cancer-free controls were recruited in Chiayi Christian Hospital from August 2002 to May 2009. Polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method was used to determine the – 31 G/C polymorphism at *survivin* promoter region. There was a significant difference in the frequency distribution of *survivin* promoter – 31 G/C polymorphism in BC cases as compared to controls. Among BC cases, individuals with the C/C genotype of *survivin* promoter have a significantly higher prevalence of invasive (T2-T4) or high-grade (G2-G3) tumors as compared to those who carried the G/G genotype. In conclusion, our findings suggest that the *survivin* promoter – 31 G/C polymorphism was not only associated with clinical stage and pathological grade but also involved in the development of bladder cancer.

KEYWORDS

Survivin; Bladder Cancer; Polymorphism; Apoptosis

Cite this paper

Huang, Z. , Chiang, Y. , Tung, M. , Wu, C. , Chen, K. , Huang, M. , Wang, Y. and Shen, C. (2013) *Survivin* promoter rs9904341 polymorphism is associated with tumor stage and grade in patients with bladder cancer. *Advances in Bioscience and Biotechnology*, 4, 1-5. doi: 10.4236/abb.2013.41001.

References

- [1] Melet, A., et al. (2008) Apoptotic pathways in tumor progression and therapy. *Advances in Experimental Medicine and Biology*, 615, 47-79. doi:10.1007/978-1-4020-6554-5_4
- [2] Reed, J.C. et al. (2001) The Survivin saga goes in vivo. *The Journal of Clinical Investigation*, 108, 965-969. doi:10.1172/JCI114123
- [3] Sah, N.K., et al. (2006) Structural, functional and therapeutic biology of survivin. *Cancer Letters*, 244, 164-171. doi:10.1016/j.canlet.2006.03.007
- [4] Duffy, M.J., et al. (2007) Survivin: A promising tumor biomarker. *Cancer Letters*, 249, 49-60. doi:10.1016/j.canlet.2006.12.020
- [5] Shen, C.H., et al. (2007) Inducible nitric oxide synthase promoter poly-morphism, cigarette smoking, and urothelial carcinoma risk. *Urology*, 69, 1001-1006. doi:10.1016/j.urology.2007.02.028
- [6] Margulis, V., et al. (2008) Survivin: a promising biomarker for detection and prognosis of bladder cancer. *World Journal of Urology*, 26, 59-65. doi:10.1007/s00345-007-0219-y
- [7] Karam, J.A., et al. (2007) Survivin expression in patients with non-muscle-invasive urothelial cell carcinoma of the bladder. *Urology*, 70, 482-486. doi:10.1016/j.urology.2007.05.009

- [Open Special Issues](#)
- [Published Special Issues](#)
- [Special Issues Guideline](#)

[ABB Subscription](#)[Most popular papers in ABB](#)[About ABB News](#)[Frequently Asked Questions](#)[Recommend to Peers](#)[Recommend to Library](#)[Contact Us](#)

Downloads: 160,012

Visits: 497,961

[Sponsors >>](#)

- [8] Ponnelle, T., et al. (2005) Cellular localisation of survivin: Impact on the prognosis in colorectal cancer. *Journal of Cancer Research and Clinical Oncology*, 131, 504-510. doi:10.1007/s00432-005-0682-z
- [9] Ulukus, E.C., et al. (2007) Survivin expression in non-small-cell lung carcinomas: Correlation with apoptosis and other apoptosis-related proteins, clinicopathologic prognostic factors and prognosis. *Applied Immunohisto-chemistry & Molecular Morphology*, 15, 31-37. doi:10.1097/01.pai.0000201808.35931.78
- [10] Lin, C.Y., et al. (2005) Survivin expression predicts poorer prognosis in patients with areca quid chewing-related oral squamous cell carcinoma in Taiwan. *Oral Oncology*, 41, 645-654. doi:10.1016/j.oraloncology.2005.02.009
- [11] Smith, S.D., et al. (2001) Urine detection of survivin and diagnosis of bladder cancer. *Journal of the American Medical Association*, 285, 324-328. doi:10.1001/jama.285.3.324
- [12] Shariat, S.F., et al. (2004) Urine detection of survivin is a sensitive marker for the noninvasive diagnosis of bladder cancer. *Journal of Urology*, 171, 626-630. doi:10.1097/01.ju.0000107826.78479.90
- [13] Swana, H.S., et al. (1999) Tumor content of the antiapoptosis molecule survivin and recurrence of bladder cancer. *The New England Journal of Medicine*, 341, 452-453. doi:10.1056/NEJM199908053410614
- [14] Ku, J.H., et al. (2004) Expression of survivin, a novel inhibitor of apoptosis, in superficial transitional cell carcinoma of the bladder. *Journal of Urology*, 171, 631-635. doi:10.1097/01.ju.0000106082.44786.3b
- [15] Chiou, S.K., et al. (2003) Survivin—An anti-apoptosis protein: Its biological roles and implications for cancer and beyond. *Med Sci Monit*, 9, P125-P129.
- [16] Li, F., et al. (1998) Control of apoptosis and mitotic spindle checkpoint by survivin. *Nature*, 396, 580-584. doi:10.1038/25141
- [17] Gonul, I.I., et al. (2007) Comparison of 1998 WHO/ ISUP and 1973 WHO classifications for interobserver variability in grading of papillary urothelial neoplasms of the bladder. *Pathological evaluation of 258 cases. Urology International*, 78, 338-344. doi:10.1159/000100839
- [18] Bircan, S., et al. (2004) Comparison of WHO 1973, WHO/ISUP 1998, WHO 1999 grade and combined scoring systems in evaluation of bladder carcinoma. *Urology International*, 73, 201-208. doi:10.1159/000080826
- [19] Tan, T.T., et al. (2008) Therapeutic targeting of death pathways in cancer: Mechanisms for activating cell death in cancer cells. *Advances in Experimental Medicine and Biology*, 615, 81-104. doi:10.1007/978-1-4020-6554-5_5
- [20] Coppola, J.M., et al. (2008) Noninvasive imaging of apoptosis and its application in cancer therapeutics. *Clinical Cancer Research*, 14, 2492-2501. doi:10.1158/1078-0432
- [21] Borbély, A.A., et al. (2007) Survivin promoter polymorphism and cervical carcinogenesis. *Journal of Clinical Pathology*, 60, 303-306. doi:10.1136/jcp.2006.037804
- [22] Jang, J.S., et al. (2008) Polymorphisms in the survivin gene and the risk of lung cancer. *Lung Cancer*, 60, 31-39. doi:10.1016/j.lungcan.2007.09.008
- [23] Wagner, M., et al. (2008) Epigenetic and genetic analysis of the survivin promoter in acute myeloid leukemia. *Leukemia Research*, 32, 1054-1060. doi:10.1016/j.leukres.2007.11.013
- [24] Cheng, Z.J., et al. (2008) Correlation of T31G/C Polymorphisms of Survivin Promoter to Tumorigenesis of Gastric Carcinoma. *Ai Zheng*, 27, 258-263. doi:10.3760/cma.j.issn.1673-422X
- [25] Xu, Y., et al. (2004) A mutation found in the promoter region of the human survivin gene is correlated to over-expression of survivin in cancer cells. *DNA and Cell Biology*, 23, 527-537. doi:10.1089/1044549041939278
- [26] Hoffman, W.H., et al. (2002) Transcriptional repression of the anti-apoptotic survivin gene by wild type p53. *The Journal of Biological Chemistry*, 277, 3247-3257. doi:10.1074/jbc.M106643200
- [27] Pina-Cabral, L., et al. (2007) Detection of survivin mRNA in urine of patients with superficial urothelial