Gene expression study related with the intrinsic pathway of apoptosis in bladder cancer by real-time PCR technique


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Received February 6, 2012
Accepted December 20, 2012
Published April 2, 2013
DOI http://dx.doi.org/10.4238/2013.April.2.4

ABSTRACT. We examined the expression of anti-apoptotic genes (XIAP and Bcl-2) and apoptotic genes (cytochrome c, caspase-9, Apaf-1) in tissue samples of patients with superficial bladder cancer. Thirty-two bladder cancer tissue samples (8 papillary urothelial neoplasm of low malignant potential, 10 low-grade, and 14 high-grade) and 8 normal bladder tissue samples from necropsy were used for the study of gene expression by real-time PCR analysis. Analysis of the expression of apoptotic gene constituents of an apoptosome demonstrated an increase in Apaf-1 expression in the three tumor grades when compared with the control (P < 0.01, P < 0.05, and P < 0.01), low expression of caspase-9 in all groups (P < 0.05), and an increase in cytochrome c expression in...
all tumor grades in relation to the control, although without statistically significant difference. The expression of anti-apoptotic genes revealed an increase in \textit{XIAP} expression in all tumor grades in relation to the control, although without statistically significant difference, and low expression of \textit{Bcl-2} in all tumor grades and the control (\(P < 0.05\)). The results proved that there is low evidence of apoptotic activity by the intrinsic pathway, demonstrated by the low expression of \textit{caspase-9} and considerable increase in \textit{XIAP} expression, which may render these genes potential therapeutic targets in bladder cancer treatment.

\textbf{Key words:} Bladder cancer; Apoptosis; Gene expression; RT-PCR