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

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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 *XIAP* expression in all tumor grades in relation to the control, although without statistically significant difference, and low expression of *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 *caspase-9* and considerable increase in *XIAP* expression, which may render these genes potential therapeutic targets in bladder cancer treatment.

Key words: Bladder cancer; Apoptosis; Gene expression; RT-PCR

