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Survivin and Caspase-3 as a diagnostic and predictive biomarkers of recurrence for urinary bladder carcinoma after TURBT

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Background: Poor sensitivity of cytology and invasiveness of urethrocystoscopy have generated interest in non-invasive tools to monitor for recurrence. Caspase-3 and survivin have central role in regulation of apoptosis. Survivin can aid early diagnosis, determine prognosis in multiple cancer types and predict response to anti-cancer therapies. Its combination with other biomarkers as Caspase-3 enhances prognostication and prediction of treatment response in Urinary Bladder Carcinoma (UBC).

Methods: Immunohistochemical expression of survivin and Caspase-3 were assessed in 44 Egyptian consecutive patients with UBC and seven cystoscopic biopsies of cystitis as control reactive benign urothelium. Relationships between their expression, clinicopathological characteristics, diagnostic and prognostic performance were statistically analyzed.

Findings: No survivin immunoreactivity was identified in non-neoplastic bladder tissue. Expression of survivin and Caspase-3 was altered in 42 (95.5%) and 10 (22.7%) cases, respectively. There was statistically significant moderate positive correlation between survivin and Caspase-3 expression among whole studied cases (p=.006). Expression of either survivin or Caspase-3 protein individually significantly differ (p=0.000) in cancer status from control cases. Survivin was an independent predictor of UBC in multivariable analyses. Diagnostic accuracy of survivin alone was significantly better than Caspase-3 alone (sensitivity 81.82% vs. 68.18%, p=.027). Addition of survivin immunoreactivity to model including Caspase-3 expression improved diagnostic accuracy with a sensitivity of 93.18%. Addition of gender to the previous model improved more diagnostic accuracy with sensitivity of 100%.

Conclusion: Survivin alone is very promising marker and reliable indicator in UBC. Survivin and Caspase-3 antigens have a cooperative effect on bladder cancer and their simultaneous evaluation augments diagnostic sensitivity.

Biography

Vivian G D Rouston has obtained her MBBCh degree from Faculty of Medicine, Alexandria University, Egypt. She has pursued her MSc degree in Anatomic Pathology from Faculty of Medicine, Alexandria University. She is currently working as a Histopathology Specialist in a general hospital of the Egyptian Ministry of Health.

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