Impact of SOX2 and CD44 as Cancer Stem Cell Markers in Urinary Bladder Carcinoma

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Background: In Egypt, bladder cancer (BC) is the third common malignant tumor. The most important items of CSCs regulatory core are transcription factors like SOX2. The cell adhesion molecule CD44 has also been found as a cell surface marker with CSCs in multiple types of tumors, like BC. Aim: This study was conducted to detect the expression of SOX2 and CD44 and correlate their expression with the available pathological parameters. Materials and Methods: The study was done on 80 cases of BC (60 cases of transitional cell carcinoma, 17 cases of squamous cell carcinoma and three cases of adenocarcinoma), 20 specimens were collected by radical cystectomy and 60 specimens were collected by transurethral resection. The specimens were immunostained with SOX2 and CD44. Results: SOX2 was positive in 46 cases of urothelial carcinoma (76.7%), 11 cases of SCC (64.7%) and all adenocarcinoma cases. SOX2 immunostaining was significantly increased with muscular invasion, and high stage in urinary bladder carcinomas. CD44 was positive in 46/60 cases of urothelial carcinoma (76.7%) and all cases of squamous cell carcinoma. The basal cell layer of adjacent, apparently normal urothelium, was also expressed a positive reaction for CD44. There was significant inverse relation in statistics between CD44 and tumor grade. CD44 was also inversely correlated with muscle invasion. Conclusion: SOX2 overexpression could be used as a marker of poor progression in bladder carcinoma cases. It could be a target for an efficient therapeutic strategy of BC treatment, high grades and more liability for infiltration. BC is associated with low expression or complete loss of CD44 immune reactivity.

Keywords: Bladder cancer; Cancer stem cells; SOX2, CD44; Immunohistochemical markers

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