ABSTRACT

Purpose: We determine the value of color mapping of bladder wall thickness for detection of tumor as a component of virtual cystoscopy.

Materials and Methods: A total of 31 subjects with hematuria and/or a history of bladder tumor underwent helical computerized tomography of the pelvis after distention of the bladder with air. Three-dimensional (D) models were constructed, and thickness of the wall was color mapped according to a fixed and validated mm. scale. Axial source images and 3D models were reviewed and graded for the presence of wall thickening. A comparison was made with findings on conventional cystoscopy in 31 patients and pathological specimen in 13.

Results: Compared with conventional cystoscopy, the analysis of axial image yielded a sensitivity of 0.80, specificity 0.90, positive predictive value 0.80 and negative predictive value 0.90 for the presence of tumor. Examination of color mapped 3D renderings resulted in 0.83, 0.36, 0.42 and 0.71, respectively.

Conclusions: Thin axial computerized tomography of the air distended bladder shows promise as a potential screening tool for bladder cancer. The low specificity of color mapped 3D renderings makes the technique inappropriate for screening. It may valuable for guiding urologists to additional suspicious sites in a patient with a known tumor.

Key Words: bladder; bladder neoplasms; tomography scanners, x-ray computed; diagnosis; data display