

STONE DISEASE

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Narrow-band imaging digital flexible ureteroscopy in detection of upper urinary tract transitional-cell carcinoma: initial experience

Traxer O, Geavlete B, de Medina SG, Sibony M, Al-Qahtani SM

Department of Urology, Tenon University Hospital, Pierre and Marie Curie University, Paris, France

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Purpose: To characterize the appearance of normal and malignant upper urinary tract lesion appearance under narrow-band imaging (NBI) using the new URF-V digital flexible ureteroscope (DFU), and to determine if NBI, when used in conjunction with white light (WL), could improve detection of malignancy.

Patients and Methods: NBI and WL were performed in 27 patients at our university teaching hospital, 14 with known cases of upper urinary tract transitional-cell carcinoma (UUT-TCC) as follow-up (group A), and 13 patients with first-suspicion of cancer (group B). Full renal collecting system examination was performed first under WL and then under NBI by a single urologist. Biopsies were taken from all detected lesions using the biopsy forceps and sent for examination by a pathologist who was blinded to the gross description of the lesion. Pathology interpretations were then compared with the corresponding WL and NBI images. Holmium laser vaporization was performed for all apparent lesions.

Results: Subjectively, NBI significantly improved the endoscopic visualization of the tumors, providing a detailed description of their limits and vascular architecture. Objectively, five additional tumors (14.2%) in four patients, as well the extended limits of three tumors (8.5%) in three patients were detected by NBI when findings by WL imaging were considered normal.

Conclusion: This is one of the first reports regarding NBI for UUT-TCC. From this study, we recommend this technology as a valuable diagnostic method, because it considerably improves tumor detection rate by 22.7% compared with WL.

Editorial Comment

Narrow band imaging utilizes an optical image enhancement technology that enhances the contrast between capillaries and tissue surfaces. This study establishes superiority in the ability to identify lesions and define the limits of disease. Others have reported its value over standard cystoscopy for bladder tumor detection. A most important finding of this study was that in 3 patients - (11%) - traditional white light imaging would have detected NO cancer while narrow band imaging provided the true diagnosis. The impact of improved detection and definition of margins on recurrence and progression of disease warrants further long-term investigation.

Dr. Manoj Monga

Director, Stevan B. Stroom Center for

Endourology & Stone Disease

Glickman Urological & Kidney Institute

The Cleveland Clinic

Cleveland, Ohio, USA

E-mail: endourol@yahoo.com