

## BLADDER CANCER

## Narrow-band imaging—improving urothelial carcinoma detection

Narrow-band imaging (NBI) is superior to white-light imaging (WLI) in detecting urothelial carcinoma of the bladder, according to a new study from China PLA General Hospital in Beijing, published in *Urologic Oncology*.

Urothelial carcinoma is a vascular cancer type, and is commonly diagnosed with WLI cystoscopy. Operating in much the same way as WLI, NBI uses modified optical filters to split white light into two bands of 415 nm and 540 nm. These wavelengths are strongly absorbed by hemoglobin, increasing the contrast between the blood vessels of the tumor and those of the submucosa.

Chen and colleagues conducted a within-patient study of 179 cases of hematuria with suspected urothelial carcinoma. Of these, urothelial carcinoma was confirmed in 143 patients, with a total of 285 tumors detected. Overall, the patient-level detection rates were 97.9% for NBI and 88.8% for WLI ( $P=0.002$ ). The patient-level false-positive detection

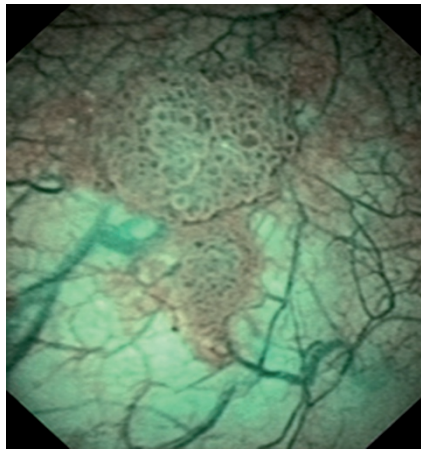
rates were comparable at 21.8% and 29.1% for NBI and WLI, respectively ( $P=0.12$ ).

At the tumor level, NBI detected a total of 59 additional tumors in 44 of the 143 patients. WLI detected 9 additional tumors in 6 patients. The mean number of urothelial carcinomas identified per patient was  $1.97 \pm 0.67$  for NBI and

$1.78 \pm 0.53$  for WLI, with tumor-level detection rates at 96.8% and 79.3%, respectively ( $P<0.001$ ).

As urothelial carcinoma has a high probability of progression and recurrence, imaging techniques with increased sensitivity are required to ensure tumors are identified early. Importantly, overlooked tumors may later be flagged as 'recurrences' after initial treatment. Reducing these instances will decrease the number of patients undergoing unnecessary aggressive treatments. The lead investigator of the study, Dr Xu Zhang, hopes that NBI will be used clinically in combination with WLI cystoscopy to improve the detection of urothelial carcinomas of the bladder.

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Courtesy of Dr Xu Zhang

**Original article** Chen, G. *et al.* Applying narrow-band imaging in complement with white-light imaging cystoscopy in the detection of urothelial carcinoma of the bladder. *Urol. Oncol.* doi:10.1016/j.urolonc.2011.02.009