

Tuesday 24 June 10.30–11.45

Imaging

Chairmen: P. O'Reilly and P. Taylor

014

A prospective analysis of 2560 patients attending a protocol-based haematuria clinic

T. EDWARDS, J. GOSLING, S. NATALE and J.S. McGRATH
Derriford Hospital, Plymouth, UK

INTRODUCTION

Haematuria represents one of the commonest conditions presenting to the urologist. It is accepted that flexible cystoscopy and some form of upper urinary tract imaging are mandatory in its investigation. Debate remains as to whether ultrasonography (US) or IVU is the imaging method of choice, and whether certain patients require imaging with both. We describe the findings in a prospective cohort of patients attending a protocol-based haematuria clinic.

PATIENTS AND METHODS

A total of 2560 patients (1699 men and 861 women, mean age 62.3 years, range 15–96)

attended the clinic between May 1998 and December 2001. First-line investigations included history, examination, urine analysis, routine blood tests, US and flexible cystoscopy. IVU and urine cytology were used in patients with persistent haematuria where no abnormality had been detected on first-line tests.

RESULTS

Of the patients, 42% had microscopic and 58% macroscopic haematuria. Repeat urine analysis confirmed persistent microscopic haematuria in 44%. First-line imaging showed suspected benign abnormalities in 17% of patients and suspected malignant conditions in 9.1%; flexible cystoscopy showed bladder

tumours in 294 (11.5%). IVU was used in 192 patients for further investigation of abnormalities on first-line tests and in 486 with persistent haematuria where no abnormality had been detected initially. Of these, 24 patients required further evaluation of abnormal IVU results, with only four requiring definitive treatment.

CONCLUSIONS

Suspected benign or malignant conditions were detected on imaging in 26.8% of patients in this series; US detected 97.5% of these. IVU suggested abnormalities requiring evaluation in a further 24 patients (0.9% overall) with only five (0.2%) requiring treatment.

015

Therapeutic transcatheter arterial embolization in the management of intractable haemorrhage from pelvic urological malignancies: preliminary experience and long-term follow-up

G. NABI, N. SHEIKH*, D.R. GREENE* and M. MARSH*
*University of Aberdeen, Aberdeen, and *Royal Sunderland Hospital, Sunderland, UK*

OBJECTIVE

To evaluate the feasibility, efficacy and complications of internal iliac artery embolization as a palliative measure in the control of intractable haemorrhage from advanced pelvic urological malignancies.

PATIENTS AND METHODS

Six patients (mean age 80 years, range 76–87) with advanced pelvic malignancies (three each of bladder and prostate carcinoma) underwent embolization between September

1997 and July 2001, using permanent coils in the anterior division of internal iliac artery bilaterally.

RESULTS

All patients had undergone conservative treatment before embolization for a mean of 2 days. The mean requirement of transfusion before embolization was 3.2 units. All patients except one were successfully embolized in a single sitting with no complication. Bleeding was successfully controlled in one patient at the second attempt at embolization. There

were minor complications, e.g. nausea, vomiting or fever, for a mean of 2 days, responding well to conservative treatment. At a mean follow-up of 22 months, no patient had a recurrence of bleeding.

CONCLUSION

Internal iliac artery embolization is a feasible, effective and minimally invasive option in managing advanced pelvic urological malignancies presenting with intractable bleeding. It should be bilateral and permanent.

016

MRI in colovesical fistula

S. RAVICHANDRAN, S.S. MATANHELIA and M. DOBSON

*Lancashire teaching Hospital, Preston, UK***INTRODUCTION**

Colovesical fistula is a surgical problem with significant morbidity. Traditionally, a barium enema and more recently CT have been used for the diagnosis. The optimal imaging technique remains to be determined. The purpose of this study was to evaluate the usefulness of MRI in detecting colovesical fistulae.

PATIENTS AND METHODS

Thirteen patients (group A) with a clinical suspicion of colovesical fistula underwent

MRI alone; the results were compared with the imaging obtained from a retrospective group of 23 patients (group B) treated for a colovesical fistula. Patients in group B often had more than one investigation but not MRI. Each investigation was evaluated by its ability to detect the fistulous tract and identify the cause.

RESULTS

In group A, MRI clearly showed the fistula and its cause in 12 patients, confirmed surgically. MRI did not detect the fistula in the remaining patient (confirmed by later laparotomy;

sensitivity and specificity 100%). In group B, the fistulous tract was seen in three of 18 patients, using a barium enema, and in eight of 13 by CT. Cystoscopy revealed a definite fistula in eight of 17 and was suggestive in five. IVU was not contributory in all 12. The cause was identified in 12 by barium enema, in nine with CT and in none with IVU.

CONCLUSION

Barium enema, CT and cystoscopy can fail to diagnose a colovesical fistula. This study shows that MRI not only shows the fistula clearly but also identifies the underlying cause.

017

Does MRI using pelvic phased-array coils better predict localized prostate cancer?

S.R.J. BOTT, A. FREEMAN, M.C. PARKINSON, S.A. SOHAIB*, R.S. KIRBY† and J. HUSBAND

*Institute of Urology, *The Royal Marsden Hospital, and †St George's Hospital, London***INTRODUCTION**

Current preoperative staging techniques are inadequate for correctly identifying men with organ-confined prostate cancer, such that 36–49% of men will have extraprostatic disease at radical prostatectomy. The use of MRI with an endorectal coil to predict extracapsular disease has been studied extensively. We report our experience of MRI on a 1 T system using a pelvic phased-array coil, not previously reported.

PATIENTS AND METHODS

In a retrospective study, 46 men with clinically localized prostate cancer underwent radical

prostatectomy and preoperative MRI, using a Siemens 1 T MRI unit and pelvic phased-array coil. The imaging findings were compared against whole-mount pathological specimens of the prostate.

RESULTS

There were 23 (50%) men with organ-confined disease, 19 (41%) with pT3 disease and four (9%) with pTx at final pathological analysis. MRI had a sensitivity of 78% and a specificity of 42% at predicting any disease beyond the prostate (> pT3a). Two men had seminal vesicle involvement; neither was identified on MRI. One man was thought to have seminal vesicle involvement at MRI but

had pT3a disease at pathology. All patients correctly identified with pT3 disease had Gleason ≥ 7 at pathology and all correctly identified with pT2 disease had Gleason ≤ 7 . Nine men with pT3 disease but predicted organ-confined disease had Gleason 7 disease, and two with pT2 disease and predicted extracapsular disease had Gleason 7 disease.

CONCLUSIONS

The results of MRI with a pelvic phased-array coil are similar to those from endorectal coil MRI. The findings at MRI may be combined with the prostate biopsy Gleason score to assist the predictive role of MRI.

018

Efficacy of endorectal MRI with pathological correlation in radical prostatectomy

M. NAIR, R. JAGANATHAN, B.D. SARMAH, R. PUNI and P. CROWE

*Birmingham Heartlands NHS Trust, Birmingham, UK***INTRODUCTION**

MRI has been recommended for identifying organ-confined prostate cancer and selecting patients for surgery. The present objectives were to delineate the accuracy of MRI in prostate cancer with pathological correlation of whole-mount specimens, and to predict the invasion of the prostatic capsule, seminal vesicle, neurovascular bundles, urethra and lymph nodes.

PATIENTS AND METHODS

Over 4 years, 89 patients underwent endorectal MRI after biopsy confirmation of carcinoma of the prostate. The MRI results and reporting was from two independent

radiologists and blind scoring using a modified Likert scale to decide the patients' suitability for radical prostatectomy. Fifty-three patients underwent surgery.

RESULTS

A multivariate analysis of radiological data and pathological specimen reports showed significant correlations; extracapsular extension/positive surgical margins ($P < 0.05$), seminal vesicle invasion ($P < 0.01$), tumour site and volume ($P < 0.01$), neurovascular bundle invasion ($P < 0.05$), urethral and nodal involvement ($P < 0.05$). MRI accurately predicted prostate-confined tumour in 45 of the 54 cases (87% accuracy). In 12 cases using an endorectal coil rather than a pelvic coil

improved the accuracy, especially for positive surgical margins and seminal vesicle invasion. All 89 men tolerated MRI well with no adverse effects.

CONCLUSIONS

Endorectal MRI is accurate, with a sensitivity of $>80\%$ and specificity of 90% for extracapsular extension and seminal vesicle invasion. MRI is well tolerated, better than TRUS, and currently easily accessible and affordable. We therefore recommend MRI and currently prefer it to TRUS in delineating organ-confined carcinoma of the prostate, and for selecting patients for radical prostatectomy.

019

Assessment of state-of-the-art CT virtual ureterorenoscopy as a navigational guide in upper urinary tract endoscopy

S. MAK, G. CATTINI, U. PATEL and K. ANSON

*St George's Hospital, London***INTRODUCTION**

Improvements in computer functionality, together with breakthroughs in virtual reality, have advanced the radiological imaging potential of upper tract pathologies. In previous studies we verified the accuracy of computer-generated three-dimensional CT models and virtual ureterorenoscopy (VR) sequences in representing the porcine renal collecting system. The object of this study was to assess the value of VR in providing navigational guidance in upper tract endoscopy.

MATERIALS AND METHODS

An isolated pig kidney model with a pre-inserted test calculus was used. Two- and

three-dimensional VR 'fly-through' sequences were generated to derive pre-operative information. Twenty novice trainees were randomized into two groups and each allocated the same task of flexible ureterorenoscopic location of calculus. Both groups were given simple instructions (instrumental functions and two-dimensional radiological information on calculus location). Test variables of time to completion of the task and a subjective/objective evaluation of the ease of navigation (visual analogue scales) provided the baseline assessments. The test group subsequently received additional VR information on calculus location. Both groups were reassessed using the same variables and test model, and the results analysed.

RESULTS

The VR information significantly improved the endoscopic location of the calculus and the ease of navigation. Full results as well as digital and endoscopic sequences will be presented.

CONCLUSION

CT VR is certainly feasible and is of significant value in providing navigational planning before a procedure. This new technology may be valuable in the diagnosis, preoperative planning and therapeutic management of patients with upper urinary tract pathology.

Funding: St George's Charitable Foundation Research Grant

020

How to take urethral rhabdosphincter biopsy cores for investigation of urethral sphincter dysfunction

D.E. ANDRICH, D. RICKARDS, D. LANDON* and A.R. MUNDY*

*Institute of Urology and *Institute of Neurology, London, UK***INTRODUCTION**

In the investigation of several lower urinary tract dysfunctions morphological analysis of the urethral rhabdosphincter could be desirable, particularly in an experimental setting. However, there are few reports of the methods for taking such biopsies.

PATIENTS AND METHODS

Patients were placed in the left lateral position; under local anaesthesia, 32 urethral rhabdosphincter biopsy cores were taken from nine female patients with urinary retention (mean age 31.6 years, range 18–45) using a biopsy gun (16 G biopsy needle) with

transvaginal ultrasonographic (TVU) guidance. In four patients additional electromyographic (EMG) localization of the rhabdosphincter was used. The biopsy cores were investigated for striated muscle content using routine histopathology and electron microscopy.

RESULTS

Similar echogenicity of the striated and smooth muscle layer made TVU identification of the rhabdosphincter component difficult and imprecise; six of the 19 cores taken with TVU guidance alone showed striated muscle fibre content, compared with seven of 13 when additional EMG guidance was used. All

patients tolerated the procedure well. There were seven adverse events associated with the procedure; four mild haematuria, two pain responsive to oral analgesia and one UTI. The function of the urethral sphincter mechanism appeared to be unaffected by the biopsy procedure.

CONCLUSION

TVU-guided biopsy of the urethral rhabdosphincter is safe and feasible. It is advisable to take three or four cores per patient to account for negative cores. The urethral rhabdosphincter can be identified more reliably with additional EMG guidance.