

Editorial Comment

Hand assisted procedures allowed less experienced laparoscopic surgeons to offer a less invasive approach to their patients with results comparable to purely laparoscopic surgery; i.e.; radical nephrectomy.

Unfortunately, the causes of hand numbness and/or pain have never been completely elucidated, i.e. fascial length and compression, pneumoperitoneum, etc.

Interestingly, this paper demonstrated that after 24 minutes of pneumoperitoneum (15 mm of Hg) the surgeon's hand would suffer hypoxia that may trigger symptoms of discomfort and pain. For surgeons that would occasionally perform this type of surgery may not suffer the effects of local hypoxia but for those who would routinely perform hand-assisted procedures that would last more than 24 minutes should be aware of this occupational risk and take precautions to prevent from chronic problems.

Dr. Fernando J. Kim

*Chief of Urology, Denver Health Med Ctr
Assistant Professor, Univ Colorado Health Sci Ctr
Denver, Colorado, USA*

IMAGING

Prophylaxis of Contrast Material-Induced Nephropathy in Patients in Intensive Care: Acetylcysteine, Theophylline, or Both? A Randomized Study

Huber W, Eckel F, Hennig M, Rosenbrock H, Wacker A, Saur D, Sennefelder A, Hennico R, Schenk C, Meining A, Schmelz R, Fritsch R, Weiss W, Hamar P, Heemann U, Schmid RM

II. Medizinische Klinik, Institut für Medizinische Statistik und Epidemiologie, Universitätsklinik Tübingen, Kinderkardiologie, Munich, Germany

Radiology. 2006; 239: 793-804

Purpose: To prospectively compare the protective effect of acetylcysteine, theophylline, and both agents combined in patients who are admitted to the intensive care unit with at least one risk factor for contrast material-induced nephropathy and who receive at least 100 mL of iodinated contrast medium.

Materials and Methods: Institutional ethics review board approval and informed consent were obtained. A total of 91 patients (mean age, 58.5 years \pm 14.8 [standard deviation]; 31 women, 60 men; 150 examinations) were admitted to the intensive care unit with at least one risk factor for contrast-induced nephropathy and received either (a) 200 mg theophylline 30 minutes before contrast medium administration (group T), (b) 600 mg acetylcysteine twice daily on the day of and (if possible) the day before the examination (group A), or (c) both agents combined (group AT). The primary endpoint for this study was the incidence of contrast-induced nephropathy (chi2 test).

Results: Groups T, A, and AT were comparable with regard to baseline creatinine levels and the amount of contrast medium administered. The incidence of contrast-induced nephropathy in groups T, A, and AT was 2%, 12%, and 4%, respectively, and was significantly lower in group T than in group A ($P = 0.047$). There was no significant difference in the incidence of contrast-induced nephropathy between groups A and AT ($P = 0.148$) or between groups T and AT ($P = 0.53$). For group A, serum creatinine did not change after 12, 24, or 48 hours compared with baseline. Creatinine levels in group T decreased 12 hours (1.19 mg/dL \pm 0.58; $P = 0.008$) and 48 hours (1.16 mg/dL \pm 0.55; $P = 0.034$) after contrast material injection compared with baseline (1.25 mg/

dL \pm 0.61). In group AT, creatinine significantly decreased 24 hours (1.21 mg/dL \pm 0.74; $P = 0.003$) and 48 hours (1.17 mg/dL \pm 0.69; $P < 0.001$) after contrast material injection compared with baseline (1.28 mg/dL \pm 0.74). Group A had significantly higher maximal increases in creatinine than groups T and AT ($P = 0.014$). Conclusion: For prophylaxis of contrast-induced nephropathy in patients who are admitted to the intensive care unit and who receive 100 mL or more of contrast medium, theophylline is superior to acetylcysteine.

Editorial Comment

Although contrast-induced nephropathy is relatively rare in patients with no risk factors, it is considered an important clinical issue since it is the third most frequent cause of acute renal failure. The frequency of contrast-induced nephropathy strongly depends on a number of risk factors: pre-existing renal dysfunction (nephropathies associated with diabetes and multiple myeloma), dehydration, congestive heart failure and use of concurrent nephrotoxic medication (including aminoglycosids and amphotericin B). For this reason, several strategies are currently proposed in order to prevent this complication, such as the use of non-contrast based imaging techniques, the reduction of the total amount of contrast material injected, the use of iso-osmolar or low-osmolar contrast agents and hyperhydration. Recently several preventive measures to avoid contrast-induced nephropathy have been proposed which include administration of N-acetylcysteine, theophylline, or fenoldopam, sodium bicarbonate infusion, and peri-procedure hemofiltration/hemodialysis. This is a very interesting and unique prospective randomized study showing that in 150 patients who were admitted to the intensive care unit and who received at least 100 mL of contrast medium, theophylline an “easy to handle” agent was superior to acetylcysteine with regard to prevention of contrast material-induced nephropathy.

Dr. Adilson Prando

*Chief, Department of Radiology
Vera Cruz Hospital
Campinas, Sao Paulo, Brazil*

Comparison of 16-MDCT and MRI for Characterization of Kidney Lesions

Beer AJ, Dobritz M, Zantl N, Weirich G, Stollfuss J, Rummeny EJ

Department of Radiology, Technische Universitaet Munichen, Munich, Germany

AJR Am J Roentgenol. 2006; 186: 1639-50

Objective: The objective of our study was to compare the diagnostic performance of 16-MDCT with that of MRI in the characterization of kidney lesions.

Subjects and Methods: Twenty-eight patients with kidney lesions detected with sonography and requiring further evaluation were examined. MDCT was performed in the unenhanced, arterial, and portal venous phases. MRI was performed at 1.5 T with T2- and T1-weighted and dynamic gadolinium-enhanced sequences. Consensus reading was done by two radiologists. Image quality was rated on a four-point scale. Classification of lesions as surgical or nonsurgical was done with five levels of confidence, and it was required that a definite diagnosis be assigned to each lesion. The 1997 TNM classification was used for staging. Statistical analysis was done by receiver operating characteristic analysis or paired Student's t test. Histologic or follow-up findings at least 12 months after the primary diagnosis served as the standard of reference.

Results: The image quality of MDCT (mean grade, 2.79 on a 0-3 scale) was superior to that of MRI (1.93; $p < 0.01$). The area under the curve for differentiating surgical from nonsurgical lesions was 0.979 for MDCT and 0.957 for MRI with resulting sensitivity and specificity values of 92.3% and 96.3% for MDCT and 92.3% and

91.3% for MRI. Sensitivity and specificity for definite classification of the lesions were 93.8% and 68.4% for MDCT and 93.8% and 71.4% for MRI.

Conclusion: Both MDCT and MRI are excellent for differentiating surgical from nonsurgical kidney lesions. Both methods have low specificity for the differentiation of benign from malignant lesions.

Editorial Comment

In this interesting original study, the authors compared the performance of state of the art, 16 channel-MDCT and 1.5 T MRI in the characterization of renal lesions previously detected by ultrasound in the same patient group. Due the presence of artifacts on MR examinations, MDCT proved superior to MRI with regard to image quality. Both MDCT and MRI however proved excellent for differentiating surgical from nonsurgical kidney lesions (sensitivity and specificity of 92.3% and 96.3% for MDCT and 92.3% and 91.3% for MRI). It is also interesting to note that both MDCT and MRI correctly depicted 15 of 16 renal cell carcinomas (sensitivity, 93.3%) but both technique had similar limitation for depiction of benign lesions (specificity, 68.4% and 71.4% respectively). This occurred because both methods were unable to differentiate between oncocytoma and renal cell carcinoma. This study confirms the classic limitation of imaging methods regarding the criteria for identification of enlarged lymph node as metastatic disease from renal cancer. In this series the authors reports that both MDCT and MRI interpretation led to overstaging 3 and 4 lesions respectively, due to the presence of enlarged lymph node(> 15 mm), currently criteria for interpreting as malignant but with reactive changes at histological examination. In our experience, MDCT and fast MR imaging has similar specificity for the detection, characterization and staging of solid renal masses larger than 1.0 cm in diameter. Similarly to the authors' experience, we consider MDCT superior for the detection of very small solid renal lesions (< 1.0 cm), but fast MRI and sometimes high-resolution ultrasound, are in some cases superior for the evaluation of complicated renal cystic masses. MRI and occasionally ultrasound better demonstrates internal septations, thickening of the cyst wall and/or septa. MRI better demonstrates areas of abnormal enhancement. In both situations, these additional findings will transform a nonsurgical into a surgical cystic mass (1).

Reference

1. Israel GM, Hindman N, Bosniak MA: Evaluation of cystic renal masses: comparison of CT and MR imaging by using the Bosniak classification system. *Radiology*. 2004; 231: 365-71.

Dr. Adilson Prando

Chief, Department of Radiology

Vera Cruz Hospital

Campinas, Sao Paulo, Brazil

UROGENITAL TRAUMA

Predictors of the Need for Nephrectomy after Renal Trauma

Davis KA, Reed RL 2nd, Santaniello J, Abodeely A, Esposito TJ, Poulakidas SJ, Luchette FA

Division of Trauma, Surgical Critical Care and Burns, Department of Surgery, Loyola University Medical Center, Stritch School of Medicine, Maywood, IL, USA

J Trauma. 2006; 60: 164-9; discussion 169-70