Tumori, 93: 269-274, 2007

HIGH RISK OF MALIGNANCY IN PATIENTS WITH INCIDENTALLY DISCOVERED ADRENAL MASSES: ACCURACY OF ADRENAL IMAGING AND IMAGE-GUIDED FINE-NEEDLE ASPIRATION CYTOLOGY

Franco Lumachi[1], Simonetta Borsato[2], Alberto Tregnaghi[3], Filippo Marino[4], Ambrogio Fassina[2], Pietro Zucchetta[5], Maria Cristina Marzola[5], Diego Cecchin[5], Franco Bui[5], Maurizio Iacobone[1], and Gennaro Favia[1]

[1]Endocrine Surgery Unit, Department of Surgical & Gastroenterological Sciences, [2]Section of Cytopathology, [3]Section of Radiology, [4]Department of Pathology, [5]Nuclear Medicine Service, Department of Diagnostic Medical Sciences, University of Padua, School of Medicine, Padova, Italy

Aims and background: **The incidental finding of nonfunctioning adrenal masses (incidentalomas) is common, but no reliable criteria in differentiating between benign and malignant adrenal masses have been defined. The aim of this preliminary study was to assess the usefulness of adrenal imaging and image-guided fine-needle aspiration cytology in patients with nonfunctioning adrenal incidentalomas with the aim of excluding or confirming malignancy before surgery.**

Methods: **Forty-two consecutive patients (18 men and 24 women; median age, 54 years; range, 25-75 years) with incidentally discovered adrenal masses of 3 cm or more in the greatest diameter were prospectively enrolled in the study. All patients underwent helical computerized tomography scan and image-guided fine-needle aspiration cytology, 33 (78.6%) underwent magnetic resonance imaging, and 26 (61.9%) underwent norcholesterol scintigraphy before adrenalectomy.**

Results: **The revised final pathology showed 30 (71.4%) benign (26 adrenocortical adenomas, of which 3 were atypical, 2 ganglioneuromas, and 2 nonfunctioning benign pheochromocytomas) and 12 (28.6%, 95% CI = 15-42) adrenal malignancies (8 adrenocortical carcinomas and 4 unsuspected adrenal metastases). The definitive diagnosis of adrenocortical carcinoma was made according to Weiss criteria and confirmed on the basis of local invasion at surgery or metastases. The sensitivity, specificity and accuracy were 75%, 67% and 83% for computerized tomography scan, 92%, 95% and 94% for magnetic resonance imaging, 89%, 94% and 92% for norcholesterol scintigraphy, and 92%, 100% and 98% for fine-needle aspiration cytology. The sensitivity and accuracy of image-guided fine-needle aspiration cytology and magnetic resonance imaging together reached 100%. Immediate periprocedural complications of fine-needle aspiration cytology occurred in 2 (4.7%) patients: self-limited pneumothorax (n = 1), and severe pain (n = 1) requiring analgesic therapy. No postprocedural or late complications were observed.**

Conclusions: **With the aim of selecting for surgery patients with a non-functioning adrenal incidentaloma of 3 cm or more in diameter, the combination of magnetic resonance imaging and fine-needle aspiration cytology should be considered the strategy of choice.**

Key words: adrenal cancer, adrenal incidentaloma, adrenal magnetic resonance imaging, adrenal malignancy, fine-needle aspiration cytology, norcholesterol scintigraphy.

Acknowledgments: This work was presented in part at the 57th Annual Cancer Symposium of the Society of Surgical Oncology, New York, NY (USA), March 18-21, 2004.

Correspondence to: Prof Franco Lumachi, Endocrine Surgery Unit, Dipartimento di Scienze Chirurgiche e Gastreoenterologiche, University of Padua, School of Medicine, Via Giustiniani 2, 35128 Padua, Italy. Tel +39-049-8211812, fax +39-049-8211378, e-mail flumachi@unipd.it

Received November 6, 2006; accepted February 2, 2007.