Urology Journal
UNRC/IUA

Vol. 1, No. 3, 213-214 Summer 2004
Printed in IRAN

Large Adenocarcinoma of the Right Adrenal Cortex: a Case Report

KHATAMI M, FANAIE A, MEHRVARZ SH, KOSARI F

Department of Surgery, Baghiatallah University of Medical Sciences, Tehran, Iran

KEY WORDS: adrenal, cancer, metastasis, survival

Introduction

Adrenocortical carcinoma is a rare tumor with an estimated incidence between 0.5 and 2 per one million people yearly. Tumors are classified as functioning when they are associated with endocrine manifestations or elevated hormone levels. Non-functioning tumors are defined as tumors that do not secrete hormones above normal levels.(1) Adrenocortical carcinoma is a rare entity and usually has poor prognosis. However, the natural history and response to therapy of patients with this malignancy have often been conflicting. Complete tumor resection may be associated with improved survival.(2) Meanwhile, the presence of intravascular tumor extension alone, should not be a contraindication to radical surgical therapy, as it is the best hope for prolonged survival.(3)

Case Report

A 36-year-old male with stage II (T_2, N_0, M_0) adrenocortical carcinoma of the adrenal gland was referred to our hospital in May 2000. The patient's chief complaint was swelling of both legs up to the knee. He had been admitted to the hospital with a diagnosis of deep vein thrombosis, which had been treated medically with heparin. He also had two episodes of transient ischemic attack, 7 and 3 years before his first admission for DVT, which had been treated and no cerebral sequelae suggesting of this condition was present. A thorough investigation was performed; all laboratory tests were normal except for a positive C reactive protein (CRP) and a cardiolipin level of 36. Ultrasound studies revealed a 13 × 6.8 cm mass in the right adrenal gland, which was later confirmed by CT scan. Liver and abdominal viscera were otherwise normal and chest CT scan was unremarkable. Considering all the examination performed, the tumor was classified as stage II. The patient underwent an adrenalectomy. Pathologic diagnosis was pheochromocytoma. In his follow-up 28 months after surgery, a mass of 53 × 54 mm was observed in the right lobe of the liver. Other investigations were normal. The liver mass was excised with a sufficient margin of unaffected tissue. Histopathological study suggested a diagnosis of metastatic adrenal adenocarcinoma. Considering the inconsistency of two pathologic diagnoses, the samples from the adrenal mass were reviewed. Immunohistochemical studies were strongly in favor of adrenal adenocarcinoma for the primary lesion (fig. 1,2). Three years after the surgery, imaging studies have revealed further metastasis.

Discussion

The prognosis of adrenocortical carcinoma in adults is generally poor. Based on the recent studies, mean survival is approximately 18 months. The overall 5-year survival rate after diagnosis is 15% to 47%. Most case series have shown statistically significant differences in survival based on patient's age, gender, or tumor functional status. However, the tumor stage is a significant prognostic factor. Surgical resection seems to be the only effective therapy for adrenocortical carcinoma that significantly prolongs survival, particularly when disease is detected at stages I and II. Also based on previous studies, after complete resection median survival is 13 to 28 months.(1) Invasive radical surgery for treatment of the primary lesion as well as early liver metastatectomy may explain why our patient outcome was better than expected. This supports the belief that invasive radical resection of the tumor and its metastases is the most effective method of treatment for this disease. Moreover, this case is a good example of effectiveness of surgical management

Accepted for publication in April 2004

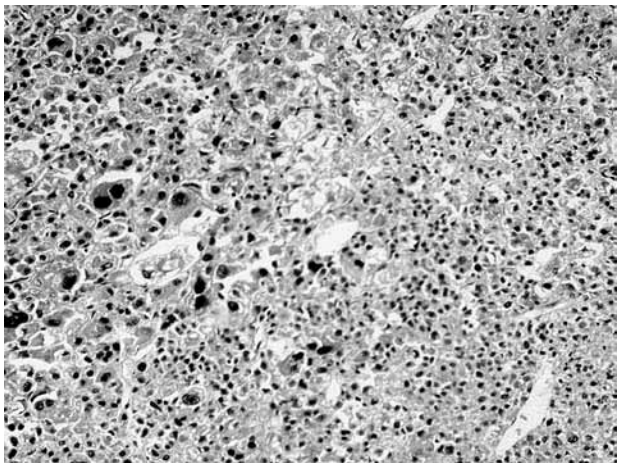

FIG. 1. High power view of the tumor cells with enlarged hyperchromatic pleomorphic nuclei and frequent prominent nucleoli with large amount of pink eosinophils (H and E staining-X400)

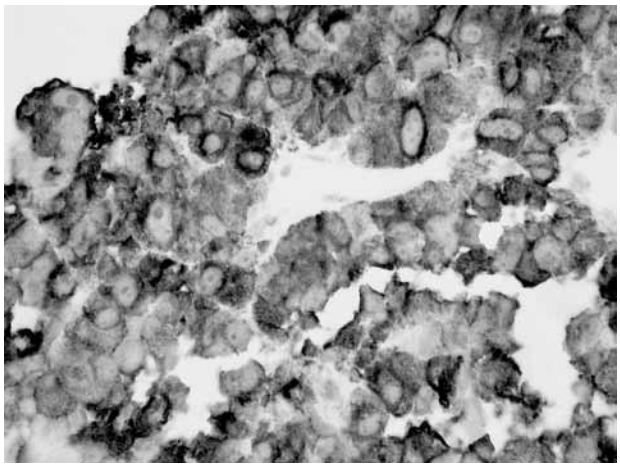

FIG. 2. Strong cytoplasmic positivity of the tumor cells for synaptothyfin (Imunohistochemical staining-X400)

in treating the recurrent or metastatic disease. The differential diagnosis of adrenocortical carcinoma (ACC) includes adrenocortical adenoma, metastatic hepatocellular carcinoma (HCC), renal cell carcinoma (RCC), and pheochromocytoma.[3] Distinction of adrenal cortical adenoma from carcinoma may be difficult in well-differentiated cases. High mitotic figures (>1 per 10 high power field), atypical mitoses, diffuse growth and tumors weighing more than 100 grams in adults are typically useful histological signs of carcinoma and so are high nuclear grade, vascular/capsular invasion, and clear cells <25% of tumor (fig. 1). Necrosis >2 high power fields and broad fibrous bands are also good discriminates. More over, metastatic dissemination in the present case is the definite criterion for malignancy.

Careful morphologic correlation with other features such as clinical presentation, location, thorough investigation for the presence of other primary tumors or the results of special stains for intracellular glycogen or mucosubstance often provides definite information as to the correct diagnosis. In a few cases, however, there may be lingering uncertainty. Most RCCs and nearly all cases of HCC are positive for cytokeratin and other epithelial markers, such as epithelial membrane antigen (EMA), that are negative in ACCs. A potentially important immunohistochemical finding for synaptophysin in a significant proportion of ACCs is as in the present case (fig. 2).

Clinical manifestation and demonstration of urinary excretion of free catecholamines and their metabolites such as vanilylmandelic acid (VMA) and metanephrines are helpful diagnostic tools in pheochromocytoma. On the other hand, on MRI, pheochromocytomas tend to show very high signal intensity on T2 weighted images. Adrenal cortical carcinomas tend to have intermediate signal intensity. ACC is often a bulky neoplasm, with the average weight in several series being 510 gr to 1210 gr. Meanwhile, the average weight of pheochromocytomas in several large series has been 73 gr to 150 gr. In gross inspection, ACC often has areas of necrosis, which is not a consistent feature in pheochromocytoma. Microscopically, pheochromocytomas are composed of pleomorphic cells arranged in sheets or in clusters (zellballen nests), separated by delicate fibrous septa. However, the tumor cells in ACC are much more pleomorphic and have more tendency to arrange in variable sized sheets and cords. Immunohistochemically, the tumor cells in ACC are positive for synaptophysin and characteristically negative for chromogranin, whereas, both markers are positive in pheochromocytoma. In addition, sustentacular cells are strongly positive for S100 protein in pheochromocytoma.[4]

References

1. Ng L, Libertino JM. Adrenocortical carconoma: diagnosis, evaluation and treatment. J Urol 2003; 169: 5-11.
2. Tritos NA, Cushing GW, Heatley G, Libertino JA. Clinical features and prognostic factors associated with adrenocortical carcionma: Lahey clinic medical center experience. Am Surg 2000; 66: 73-79.
3. Hisham AN, Sarojah A, Zanariah H. Large aderenocortical carcinoma extending into the inferior vena cava and right atrium. Asian J Surg 2003; 26(1): 40-42.
4. Lack EE. Afip Atlas of Tumor Pathology: Tumors of the Adrenal Gland and Extra Adrenal Paraganglia (Atlas of Tumor Pathology). 3rd ed. American Registry of Pathology; 1997.