CASE REPORT

Adrenal tumors associated with inadequately treated congenital adrenal hyperplasia

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We describe a case of salt-losing congenital adrenal hyperplasia due to 21-hydroxylase deficiency complicated by a right adrenal adenoma. The development of adrenal adenoma or carcinoma in-patients with congenital adrenal hyperplasia (CAH) is rare; the etiology is not clear but is thought to be related to inadequate glucocorticoid therapy. Tumor formation is postulated to be a consequence of ACTH hypersecretion, which results from the lack of glucocorticoid synthesis. Our patient underwent clitorectomy and multiple constructive procedures as a newborn baby; she was managed with hormone replacement for many years. However while she took adequate mineralocortocoid dosage, she chronically tended to take inadequate doses of glucocorticoid seeking to increase her muscle ability. She developed a 6.5 cm adrenal tumor. She was managed by a hand-assisted laparoscopic radical adrenalectomy. The tumor was histologically consistent with adrenal adenoma. The importance of compliance with her medications was emphasized.

Key Words: adrenal tumors, congenital adrenal hyperplasia, androgenital syndrome

Introduction

The occurrence of adrenal tumor in patients with congenital adrenal hyperplasia (CAH) is rare. Tumor development in the hyperplastic adrenal glands in patients with CAH may represent an unusual complication of inadequate or irregular glucocorticoid therapy. Since almost all these patients either were not or had been insufficiently treated with corticosteroids before diagnosis, it is presumed that the hyperplastic adrenal tissue may have undergone neoplastic transformation into adrenal adenoma or carcinoma as a result of chronic adrenocorticotropic hormone excess.[1]

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Case report

A 37-year-old woman with a known diagnosis of congenital adrenal hyperplasia[2] developed a 6.5 cm right adrenal tumor. She has been prescribed Prednisone and Florinef. However she admitted skipping some and reducing the dose of Prednisone since she enjoyed the enhanced muscular development associated with exercise when she skipped or reduced the amount of prescribed Prednisone. She had several hospitalizations due to adrenal insufficiency. Physical examination revealed a strongly muscular woman. Abdominal CT and MRI revealed a 6.3 cm right adrenal mass. The serum cortisol was 9.7 mg/dl (normal4.9-14.7), progesterone was 0.8, 17-hydroxyprogesterone was 24.7 ng (normal, 0.2-3.0 ng/ml). On July 25, 2000 the patient underwent a hand assisted laparoscopic radical right adrenalectomy. Convalescence was uneventful.

Pathological examination revealed a 6.5 cm adrenal tumor (Figure 1). Despite its size, it was considered an adrenal adenoma. The patient was instructed again about the use of hormone replacement and the importance of adherence to the correct doses of corticosteroids.

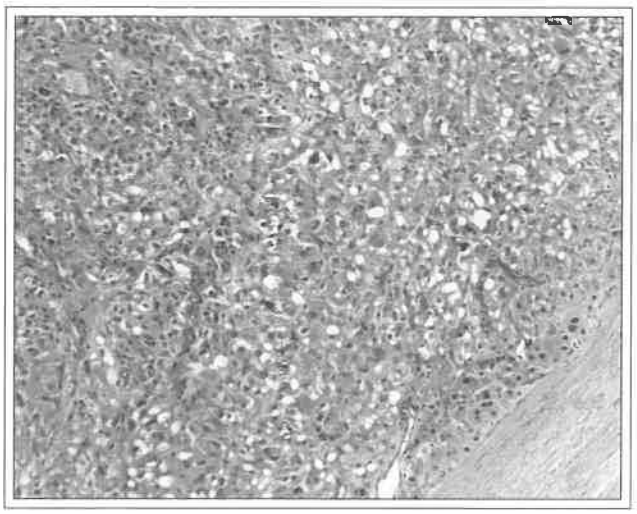

Figure 1. Photomicrograph of the adrenal tumor.

Discussion

Since the introduction of hormone replacement therapy, few cases of congenital adrenal hyperplasia complicated by adrenal tumors have been reported. Six of the reported cases were examined for precise endocrinological function and had 21-hydroxylase deficiency.[3-8] Since these patients either were not taking or were taking insufficient doses of corticosteroids, it is presumed that the hyperplastic adrenal tissue may have undergone transformation into adrenocortical adenoma or carcinoma in response to chronic adrenocorticotropic hormone hyperstimulation. Vines[9] suggested that the development of an adrenal neoplasm is only a remote possibility in patients on theoretically adequate doses of glucocorticoid hormone, whereas chronic poor compliance to therapy with resulting loss of adrenal suppression appears to be associated with the risk of development of tumors. Pang et al[6] pointed out that inadequate glucocorticoid coverage in early life or frequent episodes of infection, both resulting in chronic ACTH increase might contribute to the development of a tumor in later life. Some authors recognized that a high incidence of adrenal masses mostly nodules have been found in patients affected by both classical and late-onset congenital adrenal hyperplasia.[10-13] The study of Del Monte et al[14] revealed an increased 17 hydroxyprogestrone response to ACTH stimulation in subjects with asymptomatic adrenal nodules, and suggested that this may result from 21-hydroxylase deficiency or may reflect an enzymatic defect intrinsic to the adrenal lesion. Likewise our patient had elevated 17-OH progesterone, indicating an abnormal response of her adrenals to ACTH. In addition, adrenal nodules are much more frequent in homozygous than in heterozygous patients with CAH.[10,11] This report adds to the scant literature of adrenal tumors developing in patients with CAH. □

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