CASE REPORT

VIRILIZING ADRENOCORTICAL CARCINOMA IN A MULTIPAROUS WOMAN

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ABSTRACT

Pure virilizing adrenocortical carcinoma is a very rare malignancy in adult females. This is a case report of 35-years-old multiparous female, who presented with huge adrenal tumor with signs of virilization. Cure was achieved by adrenalectomy and adjuvant mitotane chemotherapy.

Key words *Adrenocortical carcinoma, Androgen secreting tumor, Virilization, Adrenalectomy, Mitotane.*

INTRODUCTION:

Adrenocortical carcinoma (ACC) is a rare malignancy, accounting for 0.02% of all annual cancers reported.[1] About 60% are functional tumors secreting hormones, with its consequent clinical manifestations, the Cushing's syndrome due to cortisone, virilization due to androgens, feminization due to estrogens, or hypertension due to aldosterone.[2] Adrenal tumors that secrete androgens exclusively are extremely rare.[3] Surgery remains the mainstay for the management of primary and recurrent disease, whereas mitotane has remained the preferred adjuvant chemotherapeutic agent.[1]

CASE REPORT:

A 35 years old, multiparous, woman presented with huge left sided abdominal mass for the last one year. It gradually increased in size to occupy almost whole of left side of the abdomen. Patient also complaint of continuous, mild, dull pain in the mass. Pain was aggravated by constipation and physical activity. On examination she was pale looking. Her pulse was 88/min and blood pressure 110/70mmHg. She had enlarged clitoris (Figure I), and hirsutism with excessive hairs distributed all over the body. There was an oval intra-abdominal mass, 13 cm x 21cm, extending from left hypochondrium to left iliac region. It was firm in consistency and mobile side-ways.

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Her serum DHEAS level (671 μg/dL) was elevated, whereas 24-hours urinary VMA and 17-ketosteroid, plasma urea and electrolytes, serum testosterone, plasma aldosterone, plasma cortisol, and fasting blood glucose were within normal range (table I). Ultrasound and CT scan showed large retroperitoneal mass in the left lumbar region and epigastrium, obscuring pancreas, displacing bowel loops, and abutting abdominal wall. Significant necrosis was seen within the tumor. Staging work revealed no metastasis.

Adrenalectomy was done (Figure II). Mass was about 22 x 26cm in dimension, adherent to the left kidney, spleen and descending colon. The histopathology showed adrenocortical carcinoma most likely androgen secreting (confirmatory immunohistochemistry tests were not available). Her postoperative period was uneventful. She received four cycles of mitotane chemotherapy. She was doing

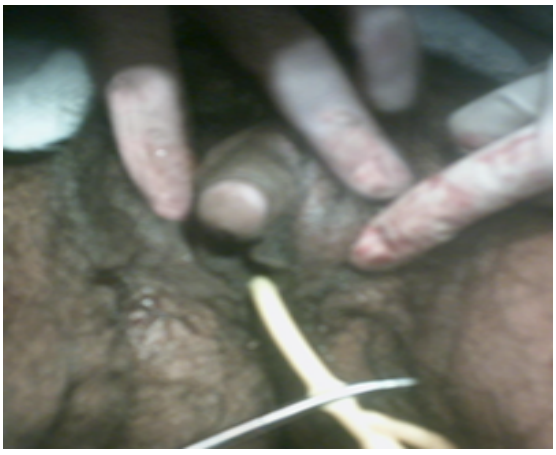

Fig I. Enlarged clitoris.

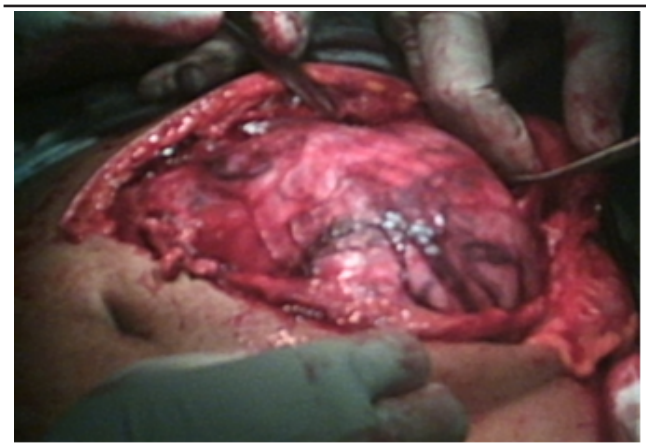

Fig II. Tumor projecting through laparotomy wound

well at 15 months follow up but later did not show up.

DISCUSSION:

ACCs are classified as functional tumors (FT) or nonfunctional tumors (NFT). FT usually presents clinically as a result of hormonal secretions like Cushing syndrome, virilization, feminization, or a mixed Cushing-virilizing syndrome. NFTs do not secrete excessive hormones or produce hormonal precursors and/or active hormones in quantities sufficient to have clinical consequences. They are usually detected as incidental findings on radiology or due to mass effect. There is a bimodal age distribution, with the disease peaking in the first and fourth decades of life.[4] FT is more common in females age <30, whereas NFT is more common in males age >30. NF tumors are quite rare in children.[4, 5] FTs in adults are more frequently a mixed Cushing-virilizing syndrome.[4, 5] Pure virilizing ACC are uncommon in adult women, as found in this 35-year-old woman.

Virilizing tumors generally present with hirsutism, acne and clitoral enlargement, as in our patient along with the tumor mass itself.[3] Measurement of serum hormone levels are diagnostic, whereas imaging studies, e.g. computed tomogram (CT), magnetic resonance imaging (MRI) and/or ultrasound helps in localization as well as staging.[3,6] These lesions generally secrete dehydroepiandrosterone (DHEA) and dehydroepiandrosterone sulfate (DHEAS), but not testosterone, which usually is produced by ovarian tumors.[7] Similar values were found in this case, as well as elevated 24-hour urinary 17-ketosteroids.[3]

Table I: Laboratory Values of the Patient along with the Reference Normal Values

Test	Patient values	Normal ranges
Fasting blood sugar (FBS)	103 mg/dl	90-126 mg/dl
Serum electrolytes		
-Soduim	140 mmol/l	137-148 mmol/l
-Potassium	4.0 mmol/l	3.8-5.0 mmol/l
-Chloride	102 mmol/l	98-107 mmol/l
-Bicarbonates	26 mmol/l	23-28 mmol/l
Blood urea	35 mmol/l	20-40 mg%
Serum creatinine	1.1mg%	0.6-1.5%
Serum aldosterone	56ng/dl	17-137ug/dl
Plasma cortisol		
-Basal	14ug/dl	5-20ug/dl
-Midnight	7 ug/dl	5-10ug/dl
Serum testosterone	453 ng/dl	M: 280-800 ng/dl F: 6-82 ng/dl
Serum DHEAS	474ugm/dl	35-430ug/dl
24 hours Urinary 17-Ketosteroid	19mg%	M: 9-22 mg% F: 6-15 mg%
24 hour Urinary VMA	4mg/24hourrs	2-7mg/24hours

CT imaging is considered diagnostic in the evaluation of adrenal masses. Malignant tumors tend to be larger in diameter (>3 cm), non-homogeneous, with blurred margins and irregular shape, whereas benign masses are smaller (<3 cm), homogeneous, with sharp borders.[8] The adrenocortical scintigraphy gives functional localization via accumulation of radiocholesterol into adrenocortical tissues. The cholesterol agent of choice is 131I-6-b-iodomethyl-19-norcholesterol (NP-59), as it provides functional information about all three hormones, glucocorticoid, mineralocorticoid, and androgen.[9]

In stage I and II disease, the tumor is confined to the adrenal gland, with a greatest tumor dimension of <5 cm (Stage I) or >5 cm (stage II), respectively. In stage III there is local tumor invasion that does not involve adjacent organs or regional lymph nodes. In Stage IV there is distant metastasis or invasion into adjacent organs as well as involvement of regional lymph nodes.[4] This patient was diagnosed as stage II disease, and a decision of adrenalectomy was made. Stage I and II disease are curable with surgery.[2] Stage III and IV disease may benefit from mitotane chemotherapy which results in optimal response both in hormonal secretion and symptom control, as well as tumor regression. Addition of streptozotocin or a combination of etoposide, cisplatin and doxorubicin, to mitotane also produced responses along with increased survival among responders.[2, 6] The overall 5-year survival remains poor, varying between 20% and 45%.[1] A decision for mitotane therapy was made in this case because of the large size of tumor. The patient remained well at 15 months after chemotherapy and then lost to follow up.

REFERENCES:

1. Roman S. Adrenocortical carcinoma. Curr Opin Oncol 2006;18:36-42.

2. Chalasani S, Vats HS, Banerjee TK, McKenzie AK. Metastatic virilizing adrenocortical carcinoma: a rare case of cure with surgery and mitotane therapy. Clin Med Res 2009; 7:48-51.

3. Cordera F, Grant C, van Heerden J, Thompson G, Young W. Androgen-secreting adrenal tumors. Surgery 2003;134:874-80.

4. Wajchenberg BL, Albergaria Pereira MA, Medonca BB, Latronico AC, Campos Carneiro P, Alves VA, et al. Adrenocortical carcinoma: clinical and laboratory observations. Cancer 2000;88:711-36.

5. Hogan TF, Gilchrist KW, Westring DW, et al. A clinical and pathological study of adrenocortical carcinoma: Therapeutic implications. Cancer 1980;45:2880–3.

6. Tupikowski W, Bednarek-Tupikowska G, Florczak A. Adrenocortical carcinoma and its treatment. Postepy Hig Med Dosw (Online) 2004;58: 27-36.

7. Del Gaudio AD, Del Gaudio GA. Virilizing adrenocortical tumors in adult women: report of 10 patients, 2 of whom each had a tumor secreting only testosterone. Cancer 1993;72:1997-2003.

8. McLoughlin RF, Bilbey JH. Tumors of the adrenal gland: findings on CT and MR imaging. Am J Roentgenol 1994;1 63: 1413-8.

9. Gross MD, Shapiro B, Freitas JE. The relationship of 13l I-6-beta-iodomethyl-norcholesterol (NP-59) adrenal cortical uptake to indices of androgen secretion in women with hyperandrogenism. Clin Nucl Med 1984;9:264-70.