ARRHENOBLASTOMA OF OVARY

(Report of a Case)

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Arrhenoblastoma of the ovary, when biologically active, often causes defeminisation and virilization of a previously normal female, but not all arrhenoblastomas are biologically active. The somatic changes that are produced by the biologically active tumour is due to the hormonal activity of the neoplasm. This neoplasm is regarded as potentially malignant, the incidence of malignant change, reported in the literature, being 25-30%. The present case is reported because of the comparative rarity of this type of neoplasm and because of its abnormal size.

Case Report

T. 25 years, para 2, gravida 2, was admitted on 4-4-1965, to the gynaecological ward with the complaint of a mass in the abdomen since ten months. The abdominal mass had been increasing in size. She also noticed abnormal development of hair on the face, chest, abdomen and on the lower entremities since four and a half years (Fig. 1). In addition to this she had amenorrhoea since the last child-birth, which was five and a half years ago — though she had stopped breast feeding the child two and a half years ago. Since one and a half months she was having irregular blood-stained discharge per vaginam. No voice changes were noticed.

Marital and obstetric history. She was married at the age of 19. She had two full-term normal deliveries, her last child-birth being 5½ years ago. Both children were alive and healthy.

Menstrual history. She attained menarche at the age of 16 and her periods were regular, 4/28. She was amenorrhoeic since her last child-birth.

Physical examination revealed a generalised hirsute female with male body habits. There was abnormal growth of hair on the face, upper lip, chest and on the abdomen extending down to the pubic region, and the pubic hair distribution was of the male type. There was abnormal growth of hair on the lower limbs also.

Per abdomen, there was a mass arising from the pelvis extending almost up to the xiphisternum. The mass was cystic with irregular lobulated surface and filled the whole abdomen. There was no evidence of free fluid in the abdomen.

Local examination. The clitoris was hypertrophied (Fig. 2). Speculum examination revealed that the cervix was atrophic, drawn up and the ectocervix was healthy. There was blood-stained discharge from inside the os. By vaginal examination the uterus could not be made out separately from the tumour mass. The cystic mass could be felt through all the fornices and was continuous with the mass felt per abdomen. There were no nodules in the pouch of Douglas.

Rectal examination revealed the same findings.

A provisional diagnosis of:

(i) Arrehenoblastoma of the ovary,

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(ii) Pseudomucinous cyst with functioning stroma,

(iii) Possibility of a pseudomucinous cyst with associated adrenal tumour was also thought of.

The following special investigations were done besides the routine.

(1) The urinary 17-keto-steroids were 8.7 mgm/day in 1680 ccs of urine.

(2) Vaginal smear was of atrophic type with plenty of leucocytes (smear taken after the blood-stained discharge stopped).

(3) Endometrial curettage was done but no scrapings were obtained.

(4) Excretory pyelography showed dilatation of the left ureter above the pelvic brim. The calyces of the left kidney were also dilated.

(5) Plain x-ray of the chest did not show any evidence of secondaries.

(6) Plain x-ray of the abdomen did not reveal any abnormalities.

Peritoneal insufflation to rule out the possibility of associated adrenal tumour could not be done due to lack of facilities.

On 3-5-1965 a laparotomy was done. The left ovary was the seat of a multilocular cyst, measuring 25 cms x 18 cms x 7 cms and weighing 2½ kgm. The capsule of the tumour had given way in one area, about 2″ in diameter. The left tube was stretched over the tumour and the other ovary appeared healthy. The uterus was bulky and there was supra-vaginal elongation of the cervix. There was no free fiuid in the abdomen. As the capsule of the tumour was deficient over one area and the tumour (suspected to be arrhenoblastoma) thought to be potentially malignant, a total hysterectomy with bilateral salpingo-oophorectomy was done. The adrenal glands were palpated. There was no suggestion of any enlargement of the adrenal glands. Abdomen was closed in layers.

Specimen — Macroscopic. Cut section of the tumour showed a multiloculated tumour filled with blood-stained mucinous fluid in the loculated spaces.

Microscopic. Ovarian neoplasm showed varigated appearance. There were sheets of spindle-shaped cells with vesicular nucleus running in various directions. Groups of round cells with vesicular nuclei were seen in places surrounded by spindle shaped cells. In some areas attempted tubule formation were seen. Frozen section showed fat globules in some of the cells. (Figs. 3-4-5). Diagnosis—Arrhenoblatosma.

(Intermediate type)

Post-operative period was uneventful. By the second week after the operation the size of the clitoris was reduced. Post-operative urinary ketosteroids were 4.8 mgm/day in 1760 ccs of urine. She was given a course of deep x-rays to prevent any recurrence of the tumour. She came for check-up 28-11-1965. On examination the facial hirsutism was still present, but the hair over the chest and abdominal wall had disappeared.

Discussion

Arrhenoblastoma is one of the common androgenic tumours; nearly 240 cases have appeared in the medical literature so far. When arrhenoblastomas produce androgen in significant amount, they result in decrease and subsequent cessation of menses, followed by progressive virilism in young women who have had normal menstrual cycles before the onset of the disease. These tumours may be solid or cystic — the cystic forms attaining huge size, as in the present case.

Robert Meyer proposed that arrhenoblastoma arises from certain male-directed cells persisting in the rate ovarii and the above name was also coined by him for this type of virilising tumours. On histological basis Robert Meyer divides these tumours into three groups or types.

Tpye I. highly differentiated type resembling testicular tissue, originally described by Pick (1905) the so-called testicular adenoma.

Type II is an intermediate group composed of variations that fall between the two groups and contains

imperfect tubules and undifferentiated sarcomatous elements.

Type III is the most undifferentiated group, composed of cells presenting an appearance of a sarcomatous nature.

It is thought that the endocrine potential of the tumour depends upon the degree of differentiation or dedifferentiation. Robert Sculy groups this variety of tumour under neoplasm arising from the ovarian sex cord and mesenchyme. He gives the designation of Sertoli-Leydig cell tumour. In a large study of cases of this type he has been able to identify the Sertoli and Leydig cells in varying degrees of differentiation. Curtis and others support a teratomatous origin in view of the multiplicity of cellular element found in the tumour. Teilum believes that arrhenoblastoma arises from a testicular blastoma (androblastoma) in the ovary in which a differentiation tending in the direction of Sertoli and/or Leydig cells may occur. The urinary 17-ketosteroid level is usually within normal range or slightly elevated. This apparent paradox is explained by the assumption that the tumours secrete testosterone, a very potent androgen, that causes virilization when present in quantities insufficient to cause a detectable increase in 17-ketesteroid excretion. Some investigators have reported results of 17-ketosteroid fractions. The biosynthetic pathways of androgens in arrhenoblastoma are similar to those of testes—Progesterone → 17 Hydroxyprogesterone → Andro-stenedione → Testesterone, and the metabolitics of these compounds may appear in the urine in abnormal amounts. Androgens secreted by arrhenoblastomas do not cause any permanent damage to the residual ovarian tissue. The menses usually return one month after removal of the tumour and there may be some improvement in the distribution of hair as seen in this case.

Some common ovarian tumours like pseudomucinous cystadenoma, serous cystadenoma, Brenner tumour and Krukenberg tumour may stimulate the ovarian stroma and its differentiation into androgenic lutein cells. The androgenic changes regress after removal of the ovarian neoplasm.

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Figs. on Art Paper III and IV