GRANULOSA CELL TUMOUR

(A clinico pathological study of 13 cases)

by

ROOPAM KALRA,* M.S.
V. B. KALRA,** M.D.
P. M. SAREEN,*** M.D.
S. K. LODHA,*** M.D.
and
R. K. VIJAY,**** M.D.

Introduction

Granulosa cell tumour (G.C.T.) of ovary is the most frequently encountered ovarian tumour associated with endocrine anomalies. The name of tumour was given by VanWerdt (Hughesdon, 1958). It is a sex cord stromal tumour of ovary which has been classified by Servo *et al* (1973) on the basis of morphology without reference to hormone production. The incidence of G.C.T. varies from 2 to 4.1% of all the ovarian tumours (Gault *et al*, 1954; Mehta and Purandare, 1964; Tyagi *et al*, 1967; Morris and Scully, 1968; Ramamurthy, 1972; Ramchandran *et al*, 1972; and Tyagi *et al*, 1979).

Usually these tumours have been described in the literature with other ovarian tumours as case reports. Very few reports are available as a series of G.C.T. The present study consists of 13 cases of G.C.T. as they presented some interesting and unusual morphological features.

*Reader in Obstetrics and Gynaecology.
**Reader in Pathology.
***Lecturer in Pathology.
****Senior Demonstrator in Pathology.
Departments of Obstetrics and Gynaecology and Pathology, S.P. Medical College, Bikaner (Rajasthan).
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Material and Methods

Thirteen cases of G.C.T. were observed from the specimens received in the form of abdominal hysterectomy or tumour masses from the department of Obstetrics and Gynaecology, S.P. Medical College, Bikaner from 1970 to 1981. Every patient was thoroughly interrogated and examined. Detailed gross examination of specimen was done and 4-5 blocks were prepared from separate areas of the tumours for histopathological examination. Sections were cut at 4 to 5 microns.

Besides routine H and E stain, Special stains (P.A.S.; reticulin stain) were done whenever needed.

Observations and Discussion

G.C.T. constituted 3.4% of total ovarian tumours in the present series and this incidence is in agreement with the observations of previous workers (Falls *et al*, 1949; Mehta and Purandare, 1964; Tyagi *et al*, 1967; Vora and Bhargava, 1969; Talib *et al*, 1975 and Tyagi *et al*, 1979). The tumours were seen in the age group 25-60 years with an average age of 43.1 years (Table I). Similar age distribution

TABLE I

Showing clinical features, gross and microscopic picture in 13 cases of Granulosa cell tumour

S. No.	Age (Yrs.)	Parity	Side of tumour	Clinical Features		Duration of illness	Gross appearance of tumour	Histological appearance (pattern of cells)
				Symptoms	Menstrual history			
1.	50	5	Left	Lump abdomen	Irregular bleeding	3 years	Solid & Firm	Diffuse*
2.	45	6	Left	—	Menorrhagia	5 months	Solid & Firm	Diffuse
3.	50	4	Left	Lump abdomen	Normal	10 months	Solid & Firm	Gyriform
4.	60	8	Bilateral	Lump abdomen	Irregular bleeding	2 years	Solid & Firm	Diffuse
5.	50	6	Left	—	Menorrhagia	1 year	Solid & Firm	Gyriform
6.	43	3	Left	Lump abdomen	Normal	6 months	Solid & Firm	Diffuse
7.	25	2	Right	—	Irregular bleeding	1½ years	Solid & Firm	Gyriform
8.	50	5	Right	Lump abdomen	Normal	10 months	Solid & Firm	Diffuse
9.	30	2	Left	Lump abdomen	Irregular bleeding	1½ years	Solid & Firm	Folliculoid
10.	40	3	Left	—	Menorrhagia	5 months	Solid & Firm	Diffuse
11.	37	3	Right	Lump abdomen	Normal	7 months	Solid & Firm	Diffuse
12.	45	4	Left	Lump abdomen	Menorrhagia	1 year	Solid & Firm	Diffuse*
13.	36	2	Left	—	Irregular bleeding	2 months	Cystic & Soft	Folliculoid

*Malignant tumours. All remaining tumours were benign.

has been observed by Tyagi *et al* (1979). Talib *et al* (1975) have reported average age 30 years and Einsel *et al* (1953) have observed that 60% of G.C.T. occurred after menopause. However, the tumours can occur at any age. Parity of cases ranged from 2 to 8 (Table I).

Symptomatology varies; the commonest presenting symptom in present series (Table I) was lump in abdomen (8 cases, 61.54%) followed by irregular bleeding per vagina (5 cases, 38.46%) and menorrhagia (4 cases, 30.77%). The duration of symptoms ranged from 2 months to 3 years.

Out of 13 cases, left ovary was involved in 9, right ovary in 3 and 1 was bilateral (Table I). Others have observed 16.7% (Herbut, 1953) and 17.5% (Tyagi *et al*, 1979) incidence of bilateral tumours.

The tumour varied in size from 4 cm. to 25 cm. and in weight from 700 gms. to 1500 gms. Similar variation in size was also observed by Hertig and Gore (1961) and Tyagi *et al* (1979). The surface of the tumour was smooth in 5 and lobulated in 8. Adhesions were present only in 2 cases having malignant G.C.T. The outer surface showed congested blood vessels. The tumours were mostly solid (12 cases). Only 1 case had a cystic tumour (Table I). Similar findings have been observed by Baveja *et al* (1972) and Tyagi *et al* (1979). Cut surface of all the tumours presented a variegated appearance. The colour varied from greyish white to chocolate brown or bluish black in different areas. Areas of necrosis and haemorrhage were seen in both the malignant G.C.T.

The tumours presented a variety of histological picture. The varied pattern was not only present in different tumours but also in different portions of the same tumour and even in the same section.

Cells were characterized by the presence of ill defined scanty cytoplasm and prominent vesicular nuclei of variable size. The arrangement of granulosa cells was very complex. The cells were arranged diffusely or in large masses or gyriform pattern separated by oedematous stroma in most of the cases. Folliculoid pattern is rare but was seen in 2 out of 13 cases in present series (Table I). In these cases there was formation of rosette appearance and presence of abundant Call Exner bodies, which is supposed to be the most distinguishing feature of the tumour. Connective tissue stroma was scanty in 8 cases and abundant in 5. Reticulin stain showed the presence of sparse reticulin fibres.

A high incidence of adenomyosis in association with G.C.T. has been reported (Hertig and Gore, 1961). Tyagi *et al* (1979) also reported adenomyosis in 1 out of 6 cases of G.C.T. However, no case revealed adenomyosis in the present series. There was a leiomyoma with calcification in one case from present study (Table I).

Mayer (1931) postulated that these tumours originated in the vestiges of the embryonal granulosa bodies which remain dormant for years to produce the tumour in later life following some unknown stimulation. But now-a-days this theory is generally discarded. Novak and Woodroff (1974) considered these tumours to arise from the ovarian stromal cells. Various views have been put forward to explain the pathogenesis of cystic changes in G.C.T. Haemorrhage and necrosis have been suggested as causative factors. Liquefaction of the solid area is also considered to be one of the factors. Novak and Novak (1958) attributed this to secretory and degenerative liquifying process. They also suggested that cystic areas arise from granulosa cells which can often be found especially in medullary portion. The process of cyst formation is said to be like the formation of Call Exner bodies (Haines and Jackson, 1950) as is formed by intrinsic growth pattern of a tumour by microfolliculoid type (Mayer, 1931).

Summary

Thirteen cases of granulosa cell tumour ovary occurring in the age group of 25 to 60 years with a mean age of 43.1 years have been reported. Most of these cases complained of increasing lump in lower abdomen, irregular vaginal bleeding and menorrhagia. The incidence of tumours was 3.4% of all ovarian neoplasms. Bilateral tumour was seen in 1 case. Twelve tumours were firm and solid and 1 was soft and cystic in nature—which is considered to be a rare gross appearance. Histologically, the tumours revealed varied appearance. Commonly the cells were arranged diffusely or in large masses or in gyriform pattern. Folliculoid pattern is rare, but was seen in 2 cases in the present study. In spite of so many studies done its etiology remains obscure.

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