UNCOMMON TUMOURS OF THE OVARY

(A study of four cases)

by

D. Bhaskara Reddy,* M.D., F.C.A.P., (Path.) Lond., F.A.M.S.,

Mrs. Satyabhama Reddy,** B.A., M.D., D.G.O.,

and

I. Ranganayakamma,*** M.B.B.S.

D. Sarada,**** M.D.

Introduction

A new understanding of specific types of primary ovarian tumours has arisen mainly due to the significant contribution of Meyer, Schiller, Novak and Neubecker. Reports of these tumours have become increasingly frequent in European and American literature.

A study of the 4 cases reported from a series of 108 malignant ovarian tumours received in the Department of Pathology, Guntur Medical College, Guntur, during the period of March 1955 to 1967 May be of interest. Among these 4 cases, two were mesonephromas and the remaining two were embryonal carcinomas.

Department of Pathology, Guntur Medical College, Guntur, A.P.

**Professor of Pathology, Guntur Medical College, Guntur.*

***Professor of Obst. & Gynec., Andhra Medical College, Visakhapatnam.*

****Asst. Surgeon, District Laboratories, Head Quarters Hospital, Chittoor.*

*****Asst. Professor in Pathology, Guntur Medical College, Guntur.*

Received for publication on 21-3-68.

Material and Methods

Whole slice method was carried out in all the four specimens. Haematoxylin and eosin stained histological preparations were studied in all the cases. The following special stains were also used wherever it was necessary.

1. Periodic acid—Schiff (P.A.S. stains).
2. Reticulum stain.
3. Mucicarmine stain.
4. Sudan III.

Mesonephroma

An unusual kind of ovarian malignant tumour was termed "Mesonephroma" by Schiller (1939) because areas within it resembled mesonephric glomerular structures. This similarity led Schiller to believe that the tumour originated from the embryonic mesonephric apparatus and should possess the following characteristics.

1. The tumour cells must resemble the endothelium of the glomeruli.
2. The tumours should show isolated structural units which

resemble the mesonephric glomerular like structures.

3. The pattern of these tumours is characteristically tubular and the structure of the tumour should resemble the mesonephric tubules.
4. The tumours may occur at the site normally occupied by the mesonephros.

He limited his series to those tumours in which glomeruloid structures and tubules lined by endothelial-like cells were seen. Later, Jones and Seegan and also Stromme and Traut did not accept the mesonephric derivation of these tumours. They looked upon this variety of tumour as representing a teratoid adenocystoma of the ovary. Novak *et al* (1954), Saphir and Lackner (1944) described a primary hypernephroid ovarian tumour as a lesion containing large clear cells similar to those comprising the well known renal hypernephroma.

In our present series we encountered two cases of mesonephroma, one of which exhibited the Schiller type of tumour pattern and the other the clear cell pattern of Saphir.

Case 1

A Hindu female, aged 50 years, was admitted into the hospital with a complaint of a tumour in the abdomen of two months' duration. She had her menopause ten years ago. On examination free fluid was present in the abdomen. A nodular, cystic mass of about 24 weeks size was felt in the right side of the abdomen. Side to side movement was present. Vaginal examination revealed a cystic mass in the right fornix. The uterus was retroverted.

Operation Notes

A diagnosis of carcinoma of the ovary was made and on opening the abdomen a nodular mass measuring 8" x 5" was found arising from the right ovary. The left ovary was atrophied. Hysterectomy with bilateral salpingo-oophorectomy was done.

Clinical Diagnosis:—Papillary serious cystadeno-cardinoma right ovary.

Case 2

Female, aged 40 years, was admitted to the hospital on 12-12-1964 for pain in the abdomen which was aggravated on taking food, and vomiting of 10 days, duration. She had undergone a subtotal hysterectomy for bleeding per vaginam one year ago. On opening the peritoneal cavity a soft mass shaggy in appearance was seen in the pelvis covered by loops of small intestine. The mass was removed by releasing the adhesions. Cut section of the tumour showed a variegated appearance. Tumour weighed 808 gms.

Pathology—Gross

Both the tumours replaced the normal ovarian tissue. The tumours were partly solid and partly cystic. One tumour was well encapsulated and the second one was shaggy in appearance. Cut section of both the tumours showed cystic areas filled with gelatinous material and solid areas showing a variegated appearance.

Histopathology

Case 1

(Fig. 1.) Sections from the tumour revealed large cysts lined by a single row of flattened cuboidal cells which were of varying heights depending upon their secretory activity.

The solid tissues exhibited varying degrees of differentiation. The well differentiated type consisted of closely packed acini resembling tubules lined by a single row of epithelium. Some of the acini contained papillary structures extending into the acini lined by one or more layers of columnar epithelium with delicate connective tissue stalk simulating the morphology outlined by Schiller.

Case 2

(Fig. 2) Most of the sections from the tumour showed sheets of epithelial cells with clear cytoplasm and large areas of

necrosis in which masses of epithelial cells without any particular arrangement were noted. Some areas showed a tendency towards formation of glandular structure. Most of these cells showed clear cytoplasm with vesicular nuclei.

In some areas the cells were arranged in the form of small papillae extending into the glandular tumour, presenting the clear cell hypernephroid type, as reported by Saphir and Lackner.

Comment

The mesonephroma that matches the description by Schiller and Saphir has been considered a rare tumour. Parker, Dockerty and Randall (1960) reported a 2% incidence of the hypernephroid variety among the ovarian cancers which they studied. Malloy, Dockerty and Welch (1965) reported an incidence of 5.9% among 653 cases of primary ovarian malignancy. In our series we have encountered two cases giving an incidence of 3.7% among the ovarian cancers. Hence, such a finding can better justify the term uncommon than rare.

Embryonal Carcinoma

Embryonal carcinoma is a rare, highly malignant tumour and morphologically analogous to the infantile form of embryonal carcinoma of the testis. These are basically teratomatous tumours in which the tumour tissue is extremely undifferentiated and morphologically analogous to the structures present in the earliest stages of embryonic development (Neubecker 1962).

Santesson and Marrubini (1957) reported a series of 17 cases of embryonal carcinoma. Neubecker (1962) reported 27 cases of embryonal carcinoma. Abell, Johnson and Holtz (1965) reported an incidence of 6% of all ovarian neoplasms in childhood and adolescence.

In our series we have encountered two cases.

Case 1

Female, aged 35 years, was admitted on 20-4-65 for pain in the abdomen and difficulty in micturition for the last 4 months. Periods were regular and painless. She had two children and three abortions. Last menstrual period was 25 days ago.

Operation

A nodular mass, partly cystic and partly solid, measuring 8″ x 10″, was arising from the left ovary. The other parts of the adnexae were normal. Total abdominal hysterectomy with bilateral salpingo-oophorectomy was done.

Clinical Diagnosis:—Malignant ovarian tumour.

Case 2

Female, aged 30 years, was admitted to the hospital on 8-2-67 for distension of abdomen. Patient gave a history of a recent delivery.

Examination: Ascitis was present. A nodular mass was felt per abdomen. Vaginal and rectal examination revealed the same findings.

Operation: A nodular mass was present arising from the right ovary. Hysterectomy with bilateral salpingo-oophorectomy was done.

Gross: The two tumours measured 40 gms and 550 gms. respectively. Thinly encapsulated, they presented a smooth, bosselated surface with cystic and solid areas. Cut section showed multiple cystic spaces filled with gelatinous material. The solid part of the tumour was soft and friable with yellowish necrotic areas. Some parts showed variegated appearance with haemorrhagic areas.

Histopathology (Fig. 3 & 4)

The predominent and most distinctive pattern was a loose, irregular meshwork of moderately pleomorphic, poorly differentiated cells. Cystic spaces contained pink

coagular or fibrinoid material. In some areas the cells were predominently epithelial in appearance. The tumour cells were arranged circumferentially about the blood vessels. The tumour contained round or oval hyaline globules, intracellularly and extracellularly, which were P.A.S. positive. Sudanophilic droplets were present in the tumour cells. Histological pattern of dysgerminoma was present. Dense cellular stroma with irregular acini of columnar epithelium and foci of immature cartilage were present.

Comment

The microscopic appearance of embryonal carcinomas is sufficiently distinct to enable their recognition being made without undue difficulty.

The histological pattern of embryonal carcinoma was present in association with large areas showing the distinct and unequivocal appearance of other tumours of the germ cell group (dysgerminoma, adult teratoma, terato-carcinoma). This feature does not appear to influence the biological behaviour of the tumours but does provide evidence for relating embryonal carcinomas and cells for a hypothesis as to their common origin (Neubecker). Since these tumours tend to occur in the organs which contain the germ cells, it is reasonable to conclude that the tumours arise from the germ cell (Neubecker). Willis, Simard and Theis studied the nuclear sex of a group of testicular and ovarian germ cell tumours. They concluded that seminomas and dysgerminomas are derived from diploid germ cells whereas the teratoid tumours and embryonal carcinomas are derived from the conjugation of two haploid germ cells (autofertilization).

The loose meshwork structure of primitive cells in embryonal carcinomas has been considered to be morphologically analogous to the extra-embryonic mesoblast of the early embryo (Santesson and Teilema).

It is of interest that the histological pattern of these tumours correspond closely to the type of orchioblastoma of the testis.

Conclusions and Summary

Four uncommon cases among 108 ovarian carcinomas have been studied in detail and reported.

It is important to call attention to the detailed discussion by Santesson and Marubini of the confusion surrounding the concept of Schiller's "Mesonephroma ovary" and its relation to embryonal carcinoma. Santesson and Marubini stressed the importance of the distinction between these types of tumours and that they are unrelated and can be distinguished histologically.

Mesonephromas occur not only in the ovary but also in the broad ligament, the uterus, the cervix and the vagina (Novak and Woodruff) and they may occur in patients of any age. The tumour in embryonal carcinoma has areas with a distinct papillary pattern and may show acinar structure lined by a single layer of epithelium. Further, the prognosis in mesonephroma is not invariably grave unlike embryonal carcinoma which has a very poor prognosis.

Acknowledgements

We are thankful to Dr. P. Venkateswararao M.S., Vijayawaela for giving us complete case details, and we are

also thankful to the photo-artist Sri B. Venkateswararao.

References

1. Abell, V. J., Johnson, P. & Holtz, F.: Am. J. Obst. & Gynec. 92: 1059, 1965.
2. Jones, H. W. and Seegan, G. E.: Arch. Path. 33: 18, 1942.
3. Malloy, J. J., Dockerty, M. B., Welch, J. S. and Hunt, A. B.: Am. J. Obst. & Gynec. 93: 867, 1965.
4. Meyer, Robert: Arch. f. Mikr, Anat. 4, Entwcklng. 73: 751, 1909.
5. Neubecker and Breen. J.: Cancer. 15: 546, 1962.
6. Novak, E. R. and Woodruff, J. D.: Gynec. & Obst. Pathology. ed. 5, Philadelphia. 1962, W. B. Saunders Co.
7. Novak, E. and Woodruff, J. D. and Novak, E. R.: Am. J. Obst. & Gynec. 68: 1222, 1954.
8. Parker, T. M., Dockerty, M. B. and Randall, L. M.: Am. J. Obst. & Gynec. 80: 430, 1960.
9. Saphir, O. and Lackner, J. E.: Surg. Gynec. & Obst. 79: 539, 1944.
10. Santesson, Z. and Marubini, G.: Acta. Obst. & Gynec. Scandinav. 36: 399, 1957.
11. Schiller, W.: Am. J. Cancer. 35: 1, 1939.
12. Simmard, L.: Cancer. 10: 215, 1957.
13. Stromme, W. B. and Traut, H. F.: Surg. Gynec. & Obst. 76: 293, 1943.
14. Teilum, G.: Acta. Path. et. Microbiol. Scandinav. 27: 323, 1960.
15. Theis, Z. A., Ashley, D. J. B. and Moslofi, C. K.: Cancer. 13: 323, 1943.
16. Willis, R. A.: Pathology of Tumours ed. 2, London, 1960, Butterworth & Co.

Figs. on Art Paper IV