Ovarian Tumours Complicating Pregnancy in a Malaysian Study

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THERE IS a wide variation in the incidence and pathological characteristics of ovarian tumours complicating pregnancy throughout the world. This paper reviews the pattern of this complication in pregnancy in Malaysian women.

Materials and Methods

This study was undertaken in the University Hospital, Kuala Lumpur, Malaysia. During the period May 1968 to October 1973, there was a total of 13,845 deliveries. During the same period 27 cases of ovarian tumours in pregnancy were diagnosed. Cysts less than six centimeters in diameter were excluded as they were assumed to be non-neoplastic as in the other series (Booth, 1963; Tawa, 1964; Sinnathuray, 1971). All the ovarian tumours removed at laparotomy were subjected to careful histological examination.

Results

Incidence

The incidence of this complication was one in 512 deliveries. This is compared with the results of other workers in Table I. There is thus a wide variation in the incidence reported. Although neighbouring Singapore has a population whose ethnic groups are similar to Peninsular Malaysia, these tumours appear to be less frequent in Singapore. A possible reason is that a large proportion of the patients were unbooked or booked late in pregnancy (Sinnathuray, 1971). The University Hospital, Kuala Lumpur, serves as a referral centre for almost the whole of Peninsular Malaysia; and further has a higher proportion of booked patients. All obstetric patients at booking, are subjected to a routine pelvic examination at this Institution, thus allowing for the early detection and hence a higher yield of ovarian tumours in pregnancy.

Table I

Incidence of Ovarian Tumours in Pregnancy

Study	Year	Incidence
Hass	1949	1 : 330 Pregnancies
Grimes et al	1954	1 : 81 Pregnancies
Booth	1963	1 : 591 Pregnancies
Sinnathuray	1971	1 : 6226 Pregnancies
Present Study	1974	1 : 512 Pregnancies

Racial Distribution

As shown in Table II, the highest proportion of patients was Chinese. However, this distribution is similar to that of patients attending the antenatal

Table II

Racial Distribution

Race	Number of cases	Percentage
Chinese	15	55.5
Malay	5	18.5
Indian	5	18.5
Others	2	7.5
Total	27	100.0

[1]Lecturer
[2]Lecturer
[3]Professor and Head

clinic at the hospital. This was also a similar finding in Singapore (Sinnathuray, 1971). There is, therefore, no racial bias in the incidence of ovarian tumours in Malaysian pregnant women.

Parity and Age Pattern

Seventeen patients were multiparous, with an average age of 31 years (range 21 – 43). The average age of the primiparas was 23 years (range 17 – 30). As shown in Table III, 20 patients (74 percent) were below the age of 30.

Table III
Maternal Age Pattern

Age in years	Number of cases	Percentage
Less than 20	2	7.4
20 – 30	18	66.6
31 – 40	6	22.3
More than 40	1	3.7
Total	27	100.0

Time of Tumour Detection

As shown in Table IV, one-third of the cases was diagnosed in the first trimester at routine pelvic examination. Another one-third was diagnosed in late pregnancy either at labour or at lower segment Caesarean section. Seven out of these nine patients were first seen at the ante-natal clinic at period of gestation ranging from 24 to 39 weeks, when detection of asymptomatic adnexal masses is difficult. A significant number (22.3 per cent) was discovered in the puerperium. These patients had booked late in pregnancy after the 33rd week of gestation.

Table IV
Time of Tumour Detection

Gestation	Number of cases	Percentage
1st trimester	9	33.3
2nd trimester	3	11.1
3rd trimester	9	33.3
Puerperium	6	22.3
Total	27	100.0

Location of Tumour

Grimes et al (1954) found that of the unilateral cysts, nearly twice as many were found on the left, whilst the reverse was found by Haas (1949) and Booth (1963). In this series 14 (51.8 per cent) were on the left, and 10 (37.1 per cent) were on the right; three (11.1 per cent) were bilateral.

Complications

One of the complications most feared in pregnancy is torsion of the pedicle of the ovarian tumour. In the present study, this complication occurred in three cases (11.1 per cent) at the tenth, eleventh and fifteenth week of gestation respectively. None of these patients aborted.

Three patients presented with obstructed labour due to an impacted ovarian tumour in the pelvis and were delivered abdominally (Table V).

Table V
Complications of Ovarian Tumours in Pregnancy

Nature of Complications	Number of cases	Percentage
Torsion of pedicle	3	11.1
Impacted tumour causing obstructed labour	3	11.1
Malignancy	2	7.4
Total	8	29.6

Management

In 11 patients (40.7 per cent), the ovarian tumours were removed electively between 8 and 28 weeks gestation. Of the six emergency laparotomies, two were performed before the twelth week, one in the fifteenth week and three at lower segment Caesarean section for obstructed labour. In one patient, the cyst was discovered at 14 weeks gestation, but was assessed to be less than six centimeters in diameter and was left alone. At subsequent lower segment Caesarean section for contracted pelvis, this cyst was found to have grown to about twice its original size. In the remaining nine patients, the cysts were an incidental finding either at lower segment Caesarean section or at laparotomy for post-partum sterilization. Table VI shows the type of surgery performed. In the majority of cases

Table VI
Type of Operation for Ovarian Tumours in Pregnancy

Type of Surgery	Number of cases	Percentage
Cystectomy	17	62.9
Unilateral salpingo-oophorectomy	9	33.3
Total hysterectomy and bilateral salpingo-oophorectomy	1	3.8
Total	27	100.0

(62.9 per cent), the tumours appeared benign and a cystectomy was performed. In nine patients a unilateral salpingo-oophorectomy was done. In two of these patients the tumour was gangrenous following torsion of the pedicle, in one the tumour was solid, and the remaining six patients had already completed their families and had requested sterilization earlier. One patient had a total hysterectomy and bilateral salpingo-oophorectomy because of features at laparotomy which were strongly suggestive of malignancy.

Pathologic Findings

All ovarian tumours removed were subjected to careful histological examination. The results are shown in Table VII. Twenty-five tumours (92.6 per cent) were benign, the commonest ovarian tumour in pregnancy being benigh cysttic teratoma

Table VII

Pathology of Ovarian Tumours in Pregnancy

Type of ovarian tumour	Number of cases	Percentage	
Benign			
Cystic teratoma	12	44.5	
Mucinous cystadenoma	5	18.5	
Serous cystadenoma	5	18.5	92.6
Parovarian cyst	2	7.4	
Luteal cyst	1	3.7	
Malignant			
Granulosa cell tumour	1	3.7	7.4
Dysgerminoma	1	3.7	
Total	27		100.0

(44.5 per cent). Such a pattern has been reported by other workers (Booth et al, 1963; Tawa, 1964; Sinnathuray, 1971). Of the three patients with bilateral ovarian tumours, two had dermoid cysts and one bilateral serous cystadenoma. Although Booth and Sinnathuray had no malignancies in their respective study, in the present study two cases of malignant ovarian tumours, namely dysgerminoma in a 17-year old primigravida, and malignant granulosa cell tumour in a 33-year old multipara, were encountered, giving an incidence of 7.4 per cent. The incident of malignancy in ovarian tumours complicating pregnancy has been quoted to range from 2 to 5% (Jubb, 1963). The relatively high malignancy rate of 7.4% in our study is unusual. Probable explanations are chance occurrence, or the fact that being a major referral centre, there is a tendency for complicated pregnancy cases to seek delivery at this institution.

Pregnancy Outcome

In 21 patients (77.7 per cent) pregnancy continued to 37 weeks or more. Three patients were delivered between 28 to 34 weeks; in one of these there was acute hydramnois with hydrops foetalis and in another a macerated intra-uterine death with advanced ovarian cancer. One patient aborted at 11 weeks, four days after ovarian cystectomy. Another presented as incomplete abortion at 11 weeks gestation and the ovarian tumour was detected on admission. One patient was lost to follow-up.

Mode of Delivery

Fourteen patients (51.8 per cent) had spontaneous vaginal deliveries. In six of these the tumours were undetected prior to delivery. Nine patients were delivered by lower segment Caesarean section. In three of these, the reason was an impacted tumour in the pelvis causing obstructed labour. A Caesarean hysterectomy was performed in one patient who had advanced ovarian carcinoma.

Maternal and Foetal Mortality

There was no maternal mortality in our series. One of the abortions could be attributed to the ovarian surgery. This was the patient in whom a luteal cyst was removed at 11 weeks gestation.

There were two stillbirths; one was the result of hydrops foetalis secondary to maternal and paternal alpha-thalassemia traits; in the other a macerated stillbirth was present in association with advanced ovarian tumour.

The absence of maternal mortality and the extremely low foetal wastage in our series can be attributed to the early detection of the tumour during pregnancy at this hospital, enhanced by routine vaginal examination at the booking visit.

Discussion

Based on the records of 13,845 consecutive pregnant women seen throughout pregnancy and puerperium, 27 cases of ovarian tumour complicating pregnancy were noted, giving an incident of 1 in 512 deliveries. Reported incidence of this complication has varied in different series from as high as 1 in 81 pregnancies (Grimes et al, 1954) to as low as 1 in 6226 pregnancies (Sinnathuray, 1971). The possible reasons for this wide variation in incidence are the inclusion or exclusion of cysts smaller than six centimeters in diameter, the variable time of booking patients and whether a routine pelvic examination was done at booking. Grimes

included all cysts irrespective of their sizes. Sinnathuray pointed out that only half of his cases had ante-natal care and even amongst these patients a significant number was booked late. An additional factor of importance is the generally symptomless nature of the condition unless complications set in. The importance of a bimanual examination in the first trimester is emphasized by the fact that not less than one-third of the tumours in our study were discovered at this time.

When an asymptomatic ovarian tumour is discovered in the first trimester, it usually should not be removed until the second trimester. Operation during the first trimester has been found to be associated with a high incidence of abortion of 35 per cent (Buttery et al, 1973). In our series one out of the three cases operated-on in the first trimester aborted. Buttery further found that if the tumour were operated on in the second trimester only two per cent aborted. In our study, none of the patients operated upon in the second trimester aborted. The high incidence of abortion in the first trimester of pregnancy may be related to the function and integrity of the corpus luteum of pregnancy. Csapo (1972) has shown that the pregnancy is dependent upon the corpus luteum before the seventh week of gestation and that it becomes dispensable after that due to the luteo-placental shift. Since a functional cyst will usually become smaller and disappear by the sixteenth week, this seems to be a reasonable time to remove the tumours that persist; for at a later date the increased size of the uterus may require its manipulation or make the surgical approach mechanically difficult.

If a tumour is discovered above the pelvic brim in the last five weeks of pregnancy, Holland (1945) advocates ovariotomy and subsequent vaginal delivery. The procedure however, is technically difficult at this time because of the enlarged uterus. If labour starts soon after, the patient may also have a painful abdominal scar during labour. We would, therefore, advocate waiting till term and then perform a Caesarean section together with removal of the tumour. When a tumour praeva is discovered in labour as in three of our cases, a Caesarean section should be performed, followed by the removal of the tumour.

The fact that one-third of the tumours in our study were an incidental finding at lower segment Caesarean section or at post-partum sterilization stresses the importance of routine inspection of the ovaries during these operative procedures.

There is no doubt that an ovarian tumour discovered in pregnancy should be removed as this removes a potential cause of dystocia in labour. There is also a greater liability to complications in pregnancy. Although Booth et al (1973) and Sinnathuray (1971) have not found any malignant ovarian tumours in their series, the significant incidence of malignancy of 7.5 per cent in our experience emphasizes that ovarian tumours in pregnancy should be treated surgically.

Creasman et al (1971) reported a series of 17 patients with ovarian carcinoma in pregnancy. Unusual ovarian tumours, such as dysgerminoma and granulosa cell tumour, account for a higher proportion of neoplasms than the overall ovarian cancer population. It is not surprising, therefore, that the two cases of malignancy in our series turned out to be a dysgerminoma and a malignant granulosa cell tumour. Creasman et al contend that since ovarian carcinoma is highly malignant and can grow rapidly, a patient who is found to have such a tumour antenatally probably should have the pregnancy sacrificed. In all but one patient he performed radical surgery followed by radiation and/or cytotoxic therapy. All their 10 patients in stage I A were alive and well at five years. One of our patients with granulosa cell tumour had a radical surgery (total hysterectomy and bilateral salpingo- oopherectomy) followed by chemotherapy. She was lost to follow-up two months later. The other, who had a stage I A dysgerminoma of the ovary, had a unilateral oophorectomy at 23 weeks gestation and the pregnancy went on to term and she had a normal delivery. She is alive and well five years after the initial surgery and has had three more spontaneous vaginal deliveries at term. It would appear, therefore, that sacrifice of the pregnancy need not improve the maternal prognosis and that unilateral oophorectomy may be employed in the patient with a mobile unilateral tumour with an intact capsule.

Summary

An analysis of 27 cases of ovarian tumours diagnosed in pregnancy and puerperium is presented. The incidence was I: 512. One-third of the tumours was diagnosed in the first trimester. Ninety-two per cent of the tumours were benign of which dermoid cysts were the commonest. In three of these patients torsion of the ovarian pedicle occurred and in another three, pelvic impaction caused obstructed labour. Two patients (7.4 per cent) presented with malignant ovarian tumours. The management of these tumours is discussed.

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