PRIMARY OVARIAN PREGNANCY: CURRENT DIAGNOSIS AND MANAGEMENT

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ABSTRACT

We reviewed five cases of ovarian pregnancy that were diagnosed at the Kandang Kerbau Hospital Histopathology Laboratory over three years. The clinical presentation, diagnosis and management of these patients are discussed in detail.

This condition usually occurs in parous fertile women as evidenced by three of the five patients studied. It is probably an accidental event with no predisposing features as compared to the tubal pregnancy patient. The diagnosis has been aided by the recent advances in human chorionic gonadotrophin determination and ultrasound. Ultrasound, especially transvaginal ultrasound scanning has proven to be an invaluable tool in the diagnosis of this condition. Fertility after conservative surgical procedures does not appear to be affected and ovarian wedge resection or ovarian cystectomy is the treatment of choice.

Keywords: ectopic pregnancy, diagnosis, ultrasound, management

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INTRODUCTION

Primary ovarian pregnancy is a rare form of ectopic gestation occurring about one in 7,000 deliveries[1] and accounts for 1% of all ectopic pregnancies. The criteria for diagnosis have been established by Spiegelberg[2] and will be strictly adhered to in this study. The criteria would include: (a) intact fallopian tubes; (b) the foetal sac would occupy the position of the ovary; (c) the ovary has to be connected to the uterus by the ovarian ligament, and (d) ovarian tissue located in the sac wall. A number of series[3-5] have recently been published which address the issues of the diagnosis and management of these cases. We present five cases in which ultrasound alerted the possibility of ectopic pregnancy and will discuss the diagnosis and management of this condition in detail.

MATERIAL AND METHODS

Data for this study were obtained from the five cases of ovarian pregnancy that were diagnosed by the histopathology laboratory at Kandang Kerbau Hospital during the period from 1989 to 1991. Three of the five cases were from the Department of Reproductive Medicine, Kandang Kerbau Hospital and the other two were from Toa Payoh and Alexandra Hospital respectively.

In this study, we describe the history, clinical presentation, operative findings and management of this rare condition. Characteristics presented by this case study were compared with those of published series.

RESULTS

In Table I, the pre-operative information and clinical history of the patients are listed. The patients' age ranged from 19 years to 36 years with the mean age of 28 years. Three patients (60%) had been pregnant before, while the other two had just been married for 5 and 9 months respectively. None of the patients had a previous history of surgery performed on their reproductive system. There was no history of intra-uterine contraceptive device (IUCD) use in any of the patients.

Table I – Summary of patient characteristics

Case	Age	No of years married	Gravida	Para	IUCD use
1	27	< 1	0	0	–
2	36	15	4	3	–
3	28	< 1	0	0	–
4	19	0	2	0	–
5	30	13	2	2	–

In Table II, the clinical presentations of the patients are summarised. Two of the patients (40%) presented with abdominal pains only and two others presented with bleeding per vaginam only. The remaining patient was diagnosed incidentally when she requested for a termination of pregnancy and an ultrasound scan showed no intra-uterine gestational sac and the presence of a possible ectopic pregnancy. Only one of the five cases had a definite adnexal mass on pelvic examination which was confirmed on ultrasound. Case 3 was the only case which presented in shock and this can be attributed to the presence of a ruptured ovarian pregnancy. Urine pregnancy testing (by monoclonal antibody) was positive in all cases but only cases diagnosed in 1991 (ie Case 2 and 5) had serum beta-human chorionic gonadotrophin (β-HCG) levels done and these were low for gestational age.

Table II – Summary of clinical findings

Case	Abdominal Pain	Vaginal Bleeding	Serum βHCG	Clinical Shock	Adnexal Mass Present	Weeks Amenorrhoea
1	–	+	–	–	+	8
2	–	–	1330IU/L	–	–	7
3	+	–	–	+	–	8
4	+	–	–	–	–	5
5	–	+	115IU/L	–	–	7

βHCG: Beta-Human Chorionic Gonadotrophin.

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The ultrasound findings of all the patients are listed in Table III. All the patients had a transabdominal as well as a transvaginal scan. Three of the five cases had adnexal masses which led to the suspicion of an ectopic pregnancy. One case had the appearance of a tumour localised to the ovary. Case 3 had an inconclusive scan and it is interesting to note that this was the only case in which the ovarian pregnancy had ruptured.

Table III – Ultrasound findings of the 5 cases

Case	Ultrasound findings
1	Left adnexal cystic mass in left ovary (48 by 32 mm) and very vascular. Cannot exclude a tumour.
2	Definite gestational sac seen in right adnexae with double layer echogenic ring.
3	Inconclusive scan. Fluid seen in pouch of Douglas with a small clear cyst in the left adnexae.
4	Right dense adnexal mass (about 5.3 by 4.9 cm in diameter.)
5	Right dense adnexal mass (1.3 by 1.1 cm in diameter.)

The pre-operative diagnosis, oeprative procedures and surgical findings are listed in Table IV. Four of the patients had the pre-operative diagnosis of an ectopic pregnancy while one had the suspicion of an ovarian tumour. At the time of surgery, four of the five cases were diagnosed to be on the right side and 80% were unruptured. Blood loss was generally minimal at between 100 to 200 ml except for one case, which bled over 1 litre and needed blood transfusion. Ovarian wedge resection was performed in all cases. Only one case (ie Case 5) had evidence of pelvic inflammatory disease while the remainderh ad essentially normal pelvis.

Table IV – Summary of pre-operative diagnosis and operative procedures

Case	Pre-operative Diagnosis	Diagnostic Procedure	Operative Findings	Blood Loss (ml)	Blood Transfusion	Surgical Procedure
1	Left ovarian tumour	Laparotomy	Left UOP	100	-	Left WR
2	Right EP	Laparoscopy & Laparotomy	Right UOP	200	-	Right WR
3	Right EP	Laparoscopy & Laparotomy	Right ROP	1,400	+	Right WR
4	Right EP	Laparotomy	Right UOP	200	-	Right WR
5	Right EP	Laparotomy	Right UOP	100	-	Right WR

EP : ectopic pregnancy; ROP : ruptured ovarian pregnancy;
UOP : unruptured ovarian pregnancy; WR : wedge resection

DISCUSSION

Primary ovarian pregnancy was once considered to be a very rate occurrence with the incidence estimated at one in 25,000 to 40,000 deliveries[6]. However, recent publications have questioned the validity of this assumption with the incidence being quoted as high as one in 7,000 deliveries and one in 20 to 40 ectopic gestations[1,3,4]. In our series, it was not possible to document the true incidence because of the non availability of the data required from the other two hospitals. If we agree with the newer estimates, we must consider if there is a true increase in incidence or just that more are being diagnosed because of the increased awareness of this condition. In addition, newer diagnostic modalities may have resulted in the earlier diagnosis of this condition. This would include some ovarian pregnancies which may have resolved spontaneously as is known to occur in tubal pregnancy[7].

If we examine the profile of the ovarian pregnancy patient, we will learn that ovarian pregnancy commonly occurs in the fertile patient in contrast to the tubal pregnancy patient[3,8,9]. In our study, three of the five patients had no problems conceiving while the other two were only recently married. In fact, Case 1 had a successful pregnancy 16 months after her operation for ovarian pregnancy.

With this knowledge in mind, the question of the cause of primary ovarian pregnancy still remains obscure. In contrast to tubal pregnancy patients, those with ovarian pregnancies very seldom have a history of pelvic inflammatory disease (PID). In our series, no woman had a history of PID while only one had adhesions found at surgery. Similar findings were reported by Raziel et al[4] and Sandevi et al[10]. The relationship between IUD use and ovarian pregnancy is controversial. This was first extrapolated by Lehfeldt[11] who based on his mathematical calculations, concluded that the IUD is less likely to prevent an ectopic pregnancy than an intra-uterine pregnancy. Recent studies however have shown a strong correlation between IUD use and ovarian pregnancy. Raziel et al[4] reported concurrent IUD use in 18 of 20 women when ovarian pregnancy was diagnosed. In our series, none of the cases had a history of or concurrent IUD use. Other hypotheses that have been suggested include, interference in the release of the ovum from the ruptured follicle, malfunction of the tubes and inflammatory thickening of the tunica albuginea. In the light of our present knowledge and the findings of this study, we must agree with Boronow[12] that chance is the reasonable explanation of ovarian pregnancies.

The clinical diagnosis of ovarian pregnancy is based on findings similar to those of tubal pregnancy. All the patients had a period of amenorrhoea ranging from 5 to 8 weeks and urine pregnancy testing was positive in all the cases. In this study, four of the five patients were symptomatic with abnormal vaginal bleeding or abdominal pain. The other case was diagnosed based on ultrasound findings alone but even in such a case, the provisional diagnosis was of a tubal pregnancy. The distinction between ovarian and tubal pregnancy is however of academic value since it does little more than confirm the need for laparoscopy or laparotomy. However, ultrasound is proving to be an invaluable tool in the pre-operative diagnosis of ectopic pregnancy. In practice, an intra-uterine pregnancy rules out an ectopic pregnancy: they coexist in only one in 30,000 unstimulated pregnancies[13]. In addition, a quantitative β-HCG of 1,000 or 2,000 MIU/ml or more without the presence of an intra-uterine pregnancy should arouse the suspicion of an ectopic pregnancy[14]. To confirm an ectopic pregnancy on ultrasound, one has to locate an ectopic gestation site with foetal heart activity. But this is only found in 5-19% of patients[15]. All the patients in this study had transabdominal ultrasound scanning followed by transvaginal scanning and the increased resolution of transvaginal scanning did contribute to the diagnosis of this condition. Timor-Tristch et al[16] in a study of 145 patients who were suspected of having an ectopic pregnancy, managed to obtain a sensitivity of 100% and specificity of 98% using transvaginal ultrasound scanning. In this study, all the patients had features suggestive of ectopic pregnancy ie an adnexal mass. Due to the rarity of this condition, not once was the diagnosis of an ovarian pregnancy entertained and in Case 1, although we localised the lesion to the ovary, the diagnosis of an ovarian tumour was deemed more likely.

Laparoscopy is now the gold standard for the diagnosis of ectopic pregnancy. It is now a widely accepted tool for gynaecology and provides a positive diagnosis of ectopic

pregnancy in more than 90% of patients[17]. In our study, this was performed only in Cases 2 and 3. This procedure was not performed in Cases 1 and 4 because the possibility of adnexal pathology was very likely based on the ultrasound findings. Case 5 requested for sterilisation and in view of this, laparoscopy was not performed. Cases 2 and 3 had laparoscopy performed because the diagnosis was in doubt. In Case 2, although ultrasound scanning demonstrated an extra-uterine gestational sac, she was asymptomatic and a false positive ultrasound scan could not be ruled out. Case 3 had no diagnostic ultrasound findings and although she was in shock when she arrived in hospital, this was successfully corrected with blood transfusion and at the time of surgery, she was haemodynamically stable.

The mainstay of surgical treatment for ovarian pregnancy is ovarian cystectomy or wedge resection. This is because the patients are generally fertile and the risk of recurrence is zero as no case of recurrent ovarian pregnancy has been documented. This is in contrast to tubal pregnancy which has approximately a 15% recurrence rate[18]. There is little justification to perform more radical procedures except in the following circumstances ie when complications arise, when there is independent pathology affecting other portions of the reproductive tract and also when another purpose is intended ie sterilisation. With the developments in minimally invasive surgery, laparoscopic removal of ovarian pregnancy has become a reality[19] and it remains to be seen if this will replace conventional surgery.

We may therefore conclude that ovarian pregnancy is a very low incidence condition occurring in patients of high parity or who have no problems conceiving. Diagnosis is made on findings similar to tubal pregnancy and to differentiate one or the other pre-operatively would only be of academic value. Once diagnosed during operation, conservative surgery is the mainstay of treatment.

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