UNILATERAL TUBAL ECTOPIC TWIN PREGNANCY

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Ectopic pregnancies develop when conception products implant somewhere other than in the endometrial cavity. If these pregnancies are not diagnosed and treated early, they can affect fertility and threaten the lives of otherwise healthy women. Twin pregnancies develop in approximately 1 in every 80 spontaneous pregnancies, and heterotopic pregnancies occur in about 1 in every 7,000 spontaneous pregnancies [1]. The probability of developing a unilateral tubal twin pregnancy has been calculated as 1 in every 125,000 spontaneous pregnancies. Most unilateral tubal twin gestations are reported to be monochorionic and monoamniotic [2].

A 24-year-old patient with a 5-week history of amenorrhea was admitted to our clinic with a complaint of left pelvic pain and vaginal bleeding which had lasted for 3 days. At admission, the patient was generally well and was conscious, cooperative and well-oriented. Her medical history revealed that she had been married for 3 months and was nulligravid, but used no contraception and had been planning on having children. The patient's blood pressure was 120/80 mmHg, her pulse was 84 beats/minute, and her temperature was 37°C. Pelvic examination revealed extrauterine vaginal bleeding, closed cervical os, pain on cervical movement during manual examination, and left adnexal fullness and sensitivity. Abdominal examination revealed only left lower quadrant sensitivity. The left ovary appeared normal, but transvaginal ultrasound demonstrated an approximately 4 cm-sized left juxtauterine mass and free fluid in the left paraovarian area.

Laboratory findings included a β-human chorionic gonadotropin (hCG) level of 1,200 IU/L, a progesterone level of 1 ng/L, a hemoglobin level of 14.1 g/L and a hematocrit of 43%. Laparoscopy was performed and two ectopic 3 cm-sized pregnancies were detected in the left adnexal area. Left linear salpingotomy was performed and the ectopic pregnancies were extirpated by laparoscopic monopolar coagulation. Examination of the pathologic material removed during the operation suggested that there were two separate ectopic foci, and both embryos were cultured for cytogenetic analyses and DNA isolation [3].

Cytogenetic analysis of the embryos revealed one with a 46,XX karyotype (Figure 1) and another with a 46,XY karyotype (Figure 2) [4]. DNA obtained from the second embryo demonstrated amplifications of the SRY and ZFY loci (Figure 3) [5].

The patient was discharged from hospital on postoperative day 2 and was followed-up until her β-hCG level fell below 5 mIU/L. No complications were detected during the follow-up period. A hysterosalpingography examination performed 6 months postoperatively showed both tubes to be open, and radiopaque material was able to disseminate freely to the abdominal cavity.

Blastocysts normally implant in the endometrium of the uterine cavity, and implantations in places other than the uterine cavity are called ectopic pregnancies. There has been an increase in the incidence of ectopic pregnancies worldwide in the last two decades. In the USA, ectopic pregnancy rates increased fourfold between 1970 and 1992, with 4.5 ectopic pregnancies per 1,000 pregnancies in 1970, rising to 19.7 per 1,000 pregnancies in 1992 [6].

When the pathophysiology of ectopic pregnancies is considered, the most important factor is a problem in the migration of the embryo to the endometrial cavity. Risk factors that increase migration problems include previous pelvic inflammatory disease, a previous ectopic pregnancy, a history of tubal surgery and tubal ligation, previous intrauterine device usage, and the use of artificial reproductive technology methods [7].

Amenorrhea, vaginal bleeding and pelvic pain are demonstrated in 45% of ectopic pregnancies and often contribute to their diagnosis [7]. The use of high-resolution ultrasonography equipment has made the early diagnosis of ectopic pregnancies easier and led to a decrease in mortality and morbidity.

The measurement of serum β-hCG levels, in addition to ultrasonography, can improve the evaluation of vaginal bleeding and pain during early pregnancy. The cut-off level of β-hCG used to indicate pregnancy is important. In a study performed by Barnhart et al [8],

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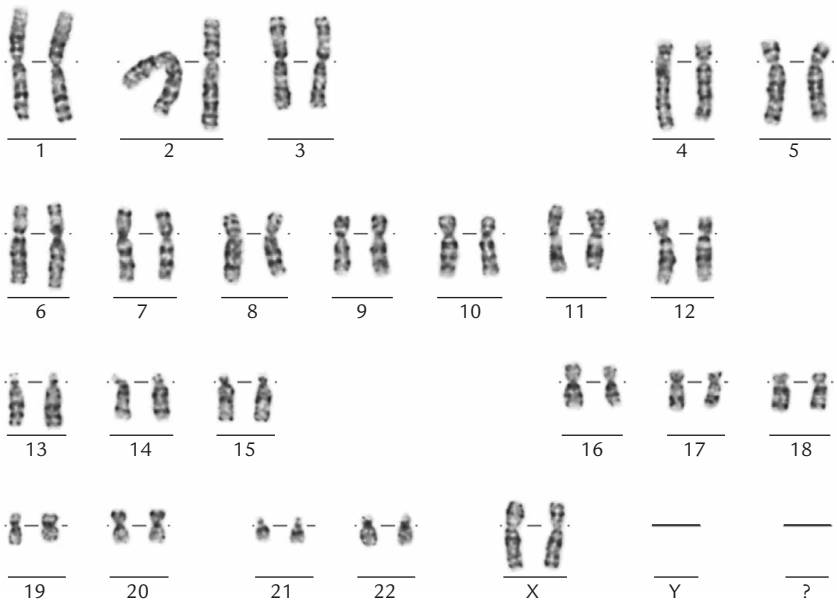

Figure 1. Karyotype 46,*XX* in material 1.

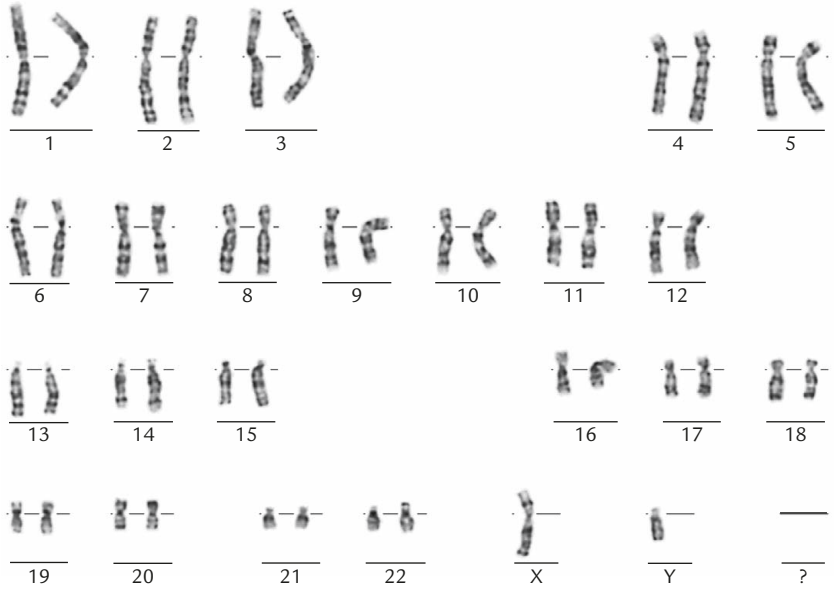

Figure 2. Karyotype 46,*XY* in material 2.

when levels of 1,500 IU/L and above were considered to indicate pregnancy (the discrimination zone), gestational sacs were found in 91.5% of patients examined, whereas no gestational sacs were detected in 28.6% of patients with levels below 1,500 IU/L. In most cases, a single β-hCG measurement has no meaning, but when the location of a pregnancy is uncertain, a 66% increase in β-hCG levels measured after a 48-hour interval supports the existence of an intrauterine pregnancy. In gestational trophoblastic diseases, β-hCG levels can increase by 20 fold, though this is not a specific finding [9].

The early detection of ectopic pregnancies and a consequent decrease in mortality and morbidity is expected as a result of the combined use of serial β-hCG measurements, together with the use of transvaginal ultrasonography. The detection of suspected adnexal masses, free liquid in the Douglas pouch, and the measurement of progesterone levels, together with β-hCG measurements in the discrimination zone, all increase the chance of diagnosis of ectopic pregnancies. Doubling of the β-hCG level in the discrimination zone over a 36- to 48-hour period and a progesterone level between 5 and 22 ng/L suggest a viable, intrauterine pregnancy. However, no doubling in β-hCG levels, a progesterone level below 5 ng/L, an increase in the amount of liquid in the Douglas pouch and no image

Figure 3. The amplification of SRY and ZFY loci in material 2, 46,*XY* karyotype. Lane 1, SRY positive control; lane 2, patient; lanes 3–4, negative control; lane 5, 100-bp ladder; lane 6, ZFY positive control; lane 7, patient; lanes 8–9, negative control.

of a sac in the endometrium, all support a diagnosis of ectopic pregnancy [10].

In our case, the preoperative detection of a mass in the left juxtauterine area, the presence of free liquid in the left paraovarian area, and the β-hCG and progesterone levels led us to suspect an ectopic pregnancy, and we, therefore, planned laparoscopy. It was of interest that the endometrial thickness in this case was only 9 mm, as the endometrial thickness usually increases in ectopic pregnancies. Prior to surgery, we were unaware of the two different ectopic foci, which could have been because of the low resolution of ultrasonography used. Embryonic material is demonstrated in 15% of ectopic pregnancies.

Laparoscopy is considered to be the gold standard for the diagnosis of ectopic pregnancies and seems to be superior to other diagnostic and therapeutic methods, because it is minimally invasive, cost-effective, useful in treatment, and only takes a short time. In cases where laparoscopy is inappropriate, such as massive bleeding, clinical shock and emergent surgical situations, laparotomy can be preferred. Methotrexate treatment or expectant treatment can be preferred in selected cases.

In the 1980s, the mortality due to ectopic pregnancies was between 72% and 90%, whereas in the 1990s, this rate had decreased to 0.14% [11]. The development of high-resolution ultrasonography equipment, the availability of advanced and more accurate laboratory methods, and the use of modern surgical techniques have all led to a decrease in mortality and morbidity due to ectopic pregnancies.

De Ott first reported a unilateral tubal twin pregnancy in 1891 [12], and in 1944, the first live twin tubal ectopic pregnancy where fetal heartbeats were detected was reported. About 100 unilateral ectopic twin pregnancies have been reported in the literature, but fetal heart movements were demonstrated in only four of these pregnancies [13]. In the case reported here, we suspected that there was only a single ectopic focus, and failed to detect any heart movement. Unlike in other cases of twin, unilateral ectopic pregnancies, we performed a genetic investigation of the gestational material and detected one embryo with a 46,XX karyotype and another with a 46,XY karyotype. Other reports have suggested that unilateral tubal twin pregnancies are usually monochorionic and monoamniotic [2].

In conclusion, when a diagnosis of ectopic pregnancy is established, although it is rare, the possibility of twin ectopic foci should be considered and management should be planned accordingly.

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