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Case report

Heterotopic pregnancy in a woman without previous ovarian hyperstimulation: ultrasound diagnosis and management

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Abstract

Heterotopic pregnancy (HT) in the absence of a previous ovarian hyperstimulation is a very rare condition. Transvaginal ultrasonography (TV) in the case of first trimester pelvic pain allows a high diagnostic reliability in the identification of HT and a successful conservative treatment by means of TV potassium chloride injection.

Keywords: Heterotopic pregnancy; Transvaginal ultrasonography; Potassium chloride

1. Introduction

The incidence of ectopic (E) pregnancy has dramatically increased during the last two decades. However, heterotopic (HT) pregnancy, the simultaneous presence of an intrauterine (IU) and an E pregnancy, is considered a very rare event. Indeed, a dramatic increase in the rate of HT pregnancy (up to 2.9%) has taken place as the consequence of the wider use of ovulation induction agents [1], but very few cases [2] have been described in women not undergoing ovarian stimulation.

In such cases a thorough and careful ultrasound examination (including transabdominal and transvaginal (TV) color doppler) is essential for a correct diagnosis of the HT unruptured E pregnancy, thus allowing a less invasive and conservative management.

2. Case report

A 34-year-old gravida 3, para 1, ab 1 presented with severe lower abdominal pain 7 weeks after her last menstrual period. The patient had not undergone any treatment for induction of ovulation. Physical examination revealed a tense abdomen, severe bilateral adnexal pain, a normal uterus volume for the reported amenorrhea and mild vaginal bleeding. Vital signs and haematochemical parameters were normal. The β-hCG serum assays showed an exponential increase up to a level of 75.000 IU. The first ultrasound examination showed a normal IU gestational sac with viable fetal pole (CRL 10 mm) and positive fetal heart motion. No fluid was found in the cul-de-sac but an irregular right adnexal mass with inhomogeneous echogenecity was found. The patient was referred to a second level ultrasonography for a TV color doppler evaluation, by means of an Apogee 800 with a 5 Mhz transvaginal probe (ATL Inc., Seattle, USA).

A careful examination of the adnexal mass revealed an irregular gestational cul-de-sac structure (Fig. 1). The TV color doppler examination allowed the identification of vitelline vessels (Fig. 2). The analysis of pulsed doppler wavelength form of these vessels showed an atypical pattern with very low impedence and a resistance index (RI) of 0.37. Furthermore, the analysis of RI of tubal arteries sampled at the isthmic zone of the fallopian tube showed a value of 0.68 on the mass side and 0.89 con-

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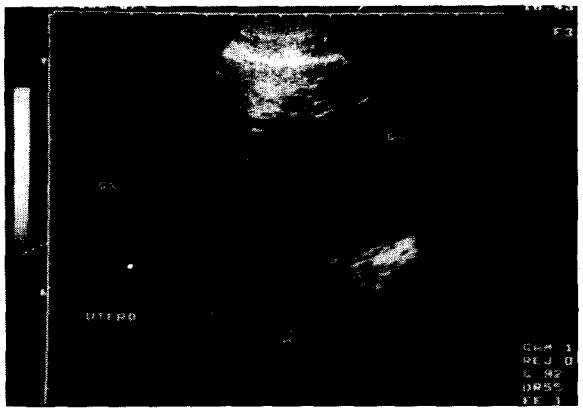

Fig. 1. The simultaneous intrauterine and ectopic gestational sacs.

trolaterally. The difference of the RI between the two sides was 21%, clearly higher than the 8% considered to be the cut-off value for diagnosing an E pregnancy [3]. Diagnosis of coexistent IU and unruptured E pregnancies was made.

Five days later when a fetal heart motion was clearly evident in the adnexal sac too, a conservative treatment was performed by injecting the E sac with potassium chloride (KCl) in order to stop the fetal heart.

Under TV sonographic control, the E sac was penetrated with an 18-gauge needle and aspirated to minimize the risk of tubal ruptures. The sac was then injected with 1 ml of 20% of KCl (Salf, Bergamo, Italy). Asystolia was then noted. The whole procedure was performed under intravenous sedation.

The woman delivered a healthy baby of 3250 g at 39 weeks gestational age by vaginal route.

3. Discussion

HT pregnancy has been considered to be a very rare event, however, at present the actual rate appears to be significantly higher. The two main reasons for this increase are the current increased rate of E pregnancies and, above all, the wider use of ovulation induction agents. This latter has been confirmed by different reports indicating a high rate of HT pregnancies after assisted reproduction [3]. This higher rate of incidence has already changed the management of pregnancies resulting from assisted reproduction. Indeed, in these patients, the presence of an IU pregnancy can no longer be considered reassuring and an early TV ultrasonographic assessment is necessary to rule out the possibility of HT pregnancy.

Fig. 2. The ectopic mass containing a secondary vitellin sac with the color flow mapping showing the vitelline flow.

In patients not undergoing ovulation induction, simultaneous IU and E pregnancy should still be considered a rare finding [2], despite the increased rate of E which is attributed to the use of antibiotics for pelvic inflammatory disease, the increased incidence of endometriosis and the delay in child-bearing.

Therefore, in women not presenting the predominant risk factor (ovulation induction), only the clinical data of unilateral pelvic pain, adnexal mass and vaginal bleeding associated with a normal IU pregnancy can address the suspicion of a HT pregnancy. Pelvic pain in the first trimester of pregnancy should not be underestimated and a combined transabdominal and TV color doppler ultrasonographic examination, performed by an experienced operator is mandatory.

In a review on the potential of ultrasound in diagnosing HT, Van-Dam in 1988 [4] indicated a clear-cut US diagnosis rate of only 14%. Nowadays, high resolution endovaginal probes with color doppler devices allow a a much higher percentage of diagnoses [5].

TV color-doppler is obviously able to make the diagnosis when an E color flow with a RI $<0{,}40$ is shown dispersed inside the solid portion of the adnexal mass clearly separated from ovarian tissue and corpus luteum. Furthermore, a difference in the RI of tubal arteries higher than 8% between the two sides has been shown to have a sensitivity of 86% and a specificity of 96% for diagnosing an ectopic pregnancy [6].

At the moment the standard method of care for HT pregnancies is still salpingectomy, performed both laparotomically and laparoscopically. When the diagnosis is made before the rupture of the tube a non-surgical treatment of HT can be opportunely adopted since surgery might threaten the IU pregnancy, as shown by the 10 abortions out of 17 treated cases in the Bourn Hall experience [7]. Among the medical options to treat an E pregnancy, we chose KCl as the theoretically safest method for preserving the IU pregnancy, thereby avoiding exposure of the IU pregnancy to MTX or prostaglandins. This approach has already been shown to be successful in the recent literature by many authors such as Marcus et al. [7] with variable, but at least comparable to surgery, rates of effectiveness and IU pregnancy preservation.

On this basis, the TV ultrasonographic aspiration of the E sac and injection of KCl is, in our view, the first choice procedure in cases of HT pregnancy with unruptured tube, considering the minimal invasiveness of the procedure that can be performed on an out-patient basis under intravenous sedation and local anesthesia, as we did successfully in the case described.

In conclusion, TV ultrasonography, due to its high diagnostic reliability, should always be used in cases of first trimester pelvic pain when, also in the absence of relevant risk factors, the suspicion of HT pregnancy needs to be ruled out. Furthermore the correct diagnosis should be pursued as early as possible in order to allow a mini-invasive conservative treatment such as TV injection of KCl.

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