CASE REPORT

Ureteral lesion secondary to vaginal ultrasound follicular puncture for oocyte recovery in in-vitro fertilization

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Techniques of oocyte retrieval have progressed from laparoscopy to transvaginal follicular aspiration under ultrasonographic control. This highly efficient method, routinely used nowadays, is not free of complications. We present a case of a ureteral lesion secondary to vaginal ultrasound follicular puncture for oocyte recovery in in-vitro fertilization. Despite the surgical procedure to reimplant the ureter, the patient achieved a twin pregnancy which is ongoing uneventfully.

Key words: complications/follicular aspiration/IVF/ureteral lesion

Introduction

The techniques of oocyte recovery for in-vitro fertilization (IVF) have been developing constantly, from recovery by means of follicular puncture under direct laparoscopic vision to the present-day use of ultrasound techniques for follicular puncture.

In 1985 Wickland et al first described oocyte recovery by means of transvaginal ultrasound puncture. This technique was rapidly accepted and spread as a result of both its great efficiency and its minimal discomfort for patients. However, there is a risk, albeit a small one, of complications derived from the technique: in puncturing the ovaries through the vaginal wall damage might be caused to nearby structures (Evers et al., 1988). The complications most frequently described in the literature are: haemorrhage resulting from direct lesion of the vaginal wall, pelvic infection (abscesses of the ovaries, tubes etc.), ovarian bleeding, and finally damage to neighbouring anatomical structures such as the intestine, pelvic blood vessels and ureter (Bennett et al., 1993).

The case we present here describes a ureteral lesion, a serious and very uncommon complication of which, to our knowledge, only one other case has been described (Jones et al., 1985).

Case report

The 33 year old patient had been suffering from primary infertility for 7 years with a diagnosis of severe male factor. She underwent an IVF cycle by means of intracytoplasmic sperm injection (ICSI) following ovarian stimulation with gonadotrophin releasing hormone (GnRH) agonists in a long protocol (leuprolide 0.2 ml/24 h s.c.; Abbot, Madrid, Spain) and gonadotrophins [pure follicle stimulating hormone (FSH-PHP; Neofertinorm®), human menopausal gonadotrophin (HMG; Pergonal®) and human chorionic gonadotrophin (HCG; Profasi®); Serono, Madrid, Spain] as previously described (Barri et al., 1988).

Both ovaries were punctured under transvaginal ultrasound (Carreras et al., 1987); 15 oocytes were obtained, 11 of which were fertilized by ICSI (Calderon et al., 1995). Two embryos were transferred 48 h after puncture and six embryos were frozen (Veiga et al., 1987). The patient received vaginal micronized progesterone 300 mg/day (Utrogestan®, Lab. Seid, Spain) as luteal-phase support treatment.

Severe abdominal pain located in the right iliac fossa, and later spreading to the right lumbar fossa, began 5 days after transfer; it was accompanied by urinary symptoms (dysuria and vesical tenesmus) and digestive symptoms (nausea and vomiting). An examination disclosed abdominal defensive reaction, signs of peritoneal irritation and positive right lumbar fist percussion. Very painful tumescence (2×2 cm) appeared in the right lateral vaginal wall. General analysis disclosed leukocytosis, raised reactive C protein, and pathological urinary sediment. Gynaecological ultrasound scan revealed mild ovarian hyperstimulation with an increase in the size of both ovaries (left ovary 43 mm, right ovary 64 mm). Renal ultrasound showed pyelo-calyceal hydronephrosis in the right kidney (Figure 1) with dilation of the proximal ureter on the same side; the left kidney was normal. A noticeable irregular enlargement of the right posterolateral wall of the urinary bladder covering an area 57 mm in length was suggestive of an inflammatory pathology (Figure 2).

With a diagnosis of either ureteral obstruction secondary to vaginal tumescence (abscess or haematoma) or vesical pathology, a diagnostic cystoscopy was performed which showed neo-formation of oedematous tissue occupying all of the right hemitrigone. A biopsy of the area was taken for later anatomopathological study and showed oedema, congestion and mild chronic inflammation. When vesical integrity had been tested, it was decided there and then to perform surgical vaginal drainage of the tumescence; the culture of the sero-haematic material obtained was negative.

By 24 h after drainage the symptoms had abated and ultrasound revealed a clear improvement of the right kidney.
Injury following oocyte recovery

Figure 1. Pyelo-calyceal hydronephrosis in the right kidney.

Figure 2. Irregular enlargement of the right posterolateral wall of the urinary bladder.

Figure 3. Pyelo-calyceal hydronephrosis normalization.

Figure 4. Normalization of the urinary bladder wall.

With minimal pyelo-calyceal dilation (Figures 3 and 4). On the following day the patient reported loss of vaginal fluid, which was confirmed and on analysis proved to be urine. With the aim of identifying the source of the urinary lesion, transurethral, and later intravenous, methylene blue was instilled, which gave a diagnosis of a ureterovaginal fistula secondary to a ureteral lesion. It was decided to reimplant the right ureter surgically. The retroperitoneal region was reached through a right-side pararectal incision, locating and freeing the ureter as far as the area of fibrosis. The ureteral cyst was sutured prior to section of the ureter. The post-operative state was satisfactory with normal diuresis and renal ultrasound scan. Twelve days post-transfer the serum $\beta$-HCG concentration was 90 U/l and rose to 285 U/l 72 h later. The patient was discharged without symptoms 12 days after she had been admitted and an ultrasound scan performed after 9 weeks of amenorrhoea confirmed the existence of a dizygotic twin pregnancy, which was delivered at 38 weeks gestation by elective Caesarian section.

Discussion

Low-quantity vaginal haemorrhage is one of the most common complications of transvaginal oocyte recovery in IVF; according to Bennett et al. (1993) it appears in 8.6% of all punctures and is susceptible to local treatment such as simple compression, the application of topical haemostatic agent, or suturing. In some cases this bleeding may be due to a lesion of the ovary originating in a haematoma, while in other more serious cases it may cause a haemoperitoneum (Tureck et al., 1993). Cases have been described of lesions of iliac vessels following both methods of approach, transvesical and transvaginal, which may require laparoscopy or emergency laparotomy (Bergh et al., 1992).

Pelvic infection represents the second most common complication (Carreras et al., 1994). It may be produced in various ways: by direct inoculation of vaginal micro-organisms, by the reactivation of an existing infectious focus, or by damage to an intestinal loop (Howe et al., 1988). One of the most difficult situations is the superinfection of an endometriotic cyst, a rich culture medium for pathogenic bacteria (Barri et al., 1992). Prophylactic administration of antibiotics to patients undergoing puncture is required in order to prevent this pathology (Meldrum, 1989). Ureteral lesion at the moment of puncture is a serious and very uncommon complication. To our knowledge there is only
one publication in this regard (Jones et al., 1985). In the case presented here, it was initially suspected that the distal ureteral obstruction was due to the extrinsic pressure of a haemotoma or an abscess, given the disappearance of symptoms and the normalization of the renal ultrasound after surgical drainage. However, the fistulization and the later diagnostic actions confirmed the ureteral lesion.

Although it cannot be proved that the lesion was directly related to the follicular puncture, the facts suggest that it is highly probable that it occurred in this way either by direct lesion or by necrosis secondary to a process of compression of a haemotoma or abscess in the area.

This case highlights the use of abdominal ultrasound in cases of postpuncture pain since it can serve as a complementary diagnosis of extrapelvic pathology. Finally, mention must be made of the normal development of a pregnancy in a patient who had a luteal phase complicated by the diagnostic tests and surgical interventions.

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References

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