CASE REPORT

Aspermia and chronic testicular pain after imperforate anus correction. Cryopreservation of sperm cells extracted from whole orchiectomized testis

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This paper describes an unusual association of aspermia and untreatable, chronic testicular pain in a young man who underwent 14 surgical interventions for an imperforate anus. Physical examination and ultrasonography revealed left epididymal and vas enlargement, normal-sized testes, tubular ectasia of the left rete testis and a small intraprostatic paramedian left cyst. Retrograde ejaculation and urogenital infections were excluded, and the FSH and karyotype results were normal. The patient gave his consent to an exploratory intervention with possible radical left orchiectomy. The patency of the left distal seminal duct was unexpectedly normal, and no sperm were found in the epididymis or vas deferens despite their obstructive appearance. Sperm were only found in a ‘testicular touch’ preparation. The removed testis was immediately opened and most of the testicular lobules were removed, thus allowing the extraction of $25 \times 10^6$ sperm, which were cryopreserved in 35 straws. An 8-month follow-up examination documented the complete absence of pain and, during the next few months, it is planned to use the thawed sperm for ICSI. Radical orchiectomy plus the cryopreservation of sperm extracted from the whole testis must be considered in the case of the co-existence of chronic unilateral testicular pain and aspermia.

Key words: aspermia/cryopreservation/imperforate anus/TESE/testicular pain

Introduction

Male infertility after treatment for imperforate anus in infancy may be related to unilateral or bilateral seminal duct obstruction, or anejaculation. When the obstruction is located in the epididymis, it is usually secondary to recurrent epididymitis, whereas distal seminal duct obstructions seem to be a result of the original surgical procedures (Holt et al., 1995). Very few data have been published concerning anejaculation secondary to imperforate anal surgery (Holt et al., 1995) and the treatment has not yet been codified (Kamischke and Nieschlag, 1999). ICSI using fresh or thawed testicular sperm retrieved from the testis can be used when conservative treatments are ineffective (Kamischke and Nieschlag, 1999). Chronic unilateral or bilateral orchialgia, defined as intermittent or constant testicular pain for $\geq 3$ months that significantly interferes with everyday activities (Davis et al., 1990) is not usually observed in Reproductive Medicine Units even in patients suffering from anejaculation. As conservative measures are frequently unsuccessful, scrotal or inguinal epididymectomy/orchepididymectomy (Davis et al., 1990) and testicular denervation (Choa and Swami, 1992) have been applied with complete or partial relief of symptoms.

This case report describes the management of a rare combination of male infertility due to aspermia and chronic unilateral orchialgia in a patient who had undergone surgical correction of anal atresia during infancy.

Case report

Clinical history and physical examination

A 26 year old man consulted our Infertility Unit because of primary aspermia (a normal orgasmic sensation without ejaculation). His previous medical history included anal atresia at birth, which had required 14 surgical interventions over a period of 23 years. He reported a condition of stabilized well-being during the previous 2 years and, as he was about to get married, he was facing the problem of reproduction for the first time. He reported a normal erection with a satisfactory orgasmic sensation, but had only rarely observed the leakage of a drop of penile secretion during orgasm; he denied nocturnal semen emissions or any psychosexual problems with his partner. He had never had urinary symptoms suggesting infection or urethral obstruction. He had for years noted left scrotal tension after sexual intercourse, which spontaneously disappeared within 1 h.

Genital examination revealed testes of normal size (18 ml by
Prader’s orchidometer) and consistency. The right epididymis and vas deferens were normal, but the left epididymis and vas deferens were enlarged and hardened. No pain was evoked by palpation, and there were no varicocele or hydrocele. The penis and urethral meatus were normal. A rectal examination was not practicable because of an anal sub-stenosis.

**Laboratory analysis**

Analysis of a small drop of semen retrieved on a slide after masturbation showed azoospermia, low pH (6.8, suggesting a prostatic origin), and leukospermia (>20 neutrophilic leukocytes per microscopic field 400×). Post-ejaculatory urinalysis was negative for germ cells, and a post-ejaculatory urine culture was also negative. FSH, testosterone and karyotype were normal.

**Ultrasound (US) examination**

Scrotal US revealed tubular ectasia of the left rete testis (Figure 1) and an enlarged left epididymis. The testicular parenchyma was normal, without any nodules or increased blood flow at duplex scanning. Right testis, epididymis and vas deferens were normal. Transabdominal ultrasound scan (a transrectal scan was impracticable) showed a small prostate with a small (5 mm diameter) paramedian left cyst. The seminal vesicles were normal (maximum anterior–posterior diameter 9 mm), as were the bladder and kidneys.

Given the complexity of the case and the fact that the patient had only requested a fertility consultation, it was decided to postpone invasive procedures such as scrotal exploration including TESE and/or transurethral resection of the ejaculatory ducts until after his marriage. Penile vibrostimulation to induce ejaculation was not tried because the patient had a normal orgasmic sensation and electroejaculation would not have been practicable because of the anal sub-stenosis.

Ten months later, the patient was urgently admitted to hospital because of a dramatic worsening in left testicular pain, which had become continuous and unbearable for 5 months. It was exacerbated by sexual activity to the point that he was obliged to refrain from intercourse, and was so intense that it significantly interfered with his work and everyday activities. He had previously taken antibiotics (ciprofloxacin, tetracycline, aztreonam) and non-steroidal anti-inflammatory drugs without any benefit. A physical examination revealed a painful, enlarged and irregular left epididymis, and the left vas felt like a pencil. There was no change in the transabdominal ultrasound scan findings, but scrotal ultrasound scan showed a worsening of the rete testis ectasia. Because of the pain, the patient consented to an exploratory intervention, with left epididymo-orchiectomy if necessary. He also authorised the extraction and cryopreservation of testicular sperm for subsequent ICSI.

**Surgical procedure**

The patient underwent exploratory left inguinotomy, with the spermatic cord being bluntly dissected with a finger down to the scrotum and the testis delivered through the wound. The inguinal portion of the vas deferens was also enlarged. The caput epididymis was found to be enlarged, with brown tubes 2–3 mm in diameter. The anatomical patency of the seminal ducts downstream from the epididymis was therefore investigated by cannulating the proximal vas deferens with a 25 G short butterfly needle and injecting 30 ml of saline solution mixed with 1 ml of 10% methylene blue. The saline solution easily passed into the bladder, thus excluding a distal seminal duct obstruction and the need for vasography (Goldstein, 1995). The injected solution was recovered through an 18 F Foley catheter and centrifuged, but no sperm were found in the Makler chamber, thus suggesting a proximal (epididymal) obstruction (Colpi et al., 1994). The epididymal fluid was then aspirated and analysed but no sperm were found. Finally, testicular touch preparation cytology revealed the presence of many sperm thus suggesting normal spermatogenesis. The surgical procedure was completed with a radical orchiectomy.

**Testicular sperm extraction and cryopreservation**

The removed testis was opened in the operating theatre by means of a longitudinal incision. Most of the testicular lobules were removed and collected in four tubes filled with Quinn’s hTF medium and HEPES (Biocare Europe). Later, in the IVF Laboratory, the lobules were transferred into Petri dishes with Quinn’s Sperm Washing Medium (BioCare Europe) and dissected into small pieces under a stereomicroscope using two coverslides (24 mm×50 mm). The bioptic sample was collected in a sterile conical tube (Falcon) and centrifuged at 600/800 g for 10 min. The sperm concentration determined using a Makler chamber was 2.5×10⁶/ml, for a total number of 25×10⁹ sperm. Eosin-tested sperm viability was 65%. After dilution with freezing medium (Irvine), 35 0.50 ml sterile straws were loaded and frozen following a rapid two-phase protocol (Wolf and Patton, 1989).

**Histological examination**

The rete testis and proximal epididymal tubules showed cystic ectasia, with no evidence of sperm inside; the rete testis was also affected by focal dystrophic calcification. Testicular histology revealed chronic aspecific orchitis associated with thickened or oedematous basal membranes. The seminiferous tubules had diameters ranging from normal to hyalinized, and contained a mean of 10 mature spermatids per tubule.

**Follow-up**

The patient was discharged from the clinic after 24 h. There were no post-operative complications. After 7 days, the patient had sexual intercourse with his partner without feeling any pain. Eight months later the patient is completely free of pain and his plasma testosterone concentration is normal. During the course of the next few months, the couple will be included in an IVF programme.

**Discussion**

This patient was simultaneously affected by infertility secondary to aspermia and monolateral chronic testicular pain, both of which were presumably due to previous surgical
interventions for imperforate anus. The aim of our intervention was to resolve both problems.

In the case of the compelling problem of chronic left scrotal pain, and as antibiotic and non-steroidal anti-inflammatory drugs had failed to improve the symptoms, we might have performed an epidididectomy. However, this procedure is not indicated in chronic pain due to epididymitis or in seminal duct obstruction (Padmore et al., 1996) and, in a study of 10 patients undergoing epidididectomy, nine required subsequent orchiectomy for the definitive treatment of pain (Davis et al., 1990). The co-existence of tubular ectasia of the left rete testis must also be stressed because, if the pain had been secondary to distension of the seminal ducts, an epidididectomy would not have resolved the problem inside the testis.

Testicular denervation (Choa and Swami, 1992) has been excluded as an alternative to epidididectomy because it does not work when there is an underlying organic disease (Heidenreich et al., 1997).

Inguinal orchiectomy was adopted because it guarantees a 73% success rate (Davis et al., 1990) and allows the extraction and cryopreservation of a considerable number of sperm (TESE).

More specific or conservative procedures for the treatment of infertility (but not pain) were rejected before or during the operation. Transurethral resection of the ejaculatory ducts (Pryor and Hendry, 1991), would presumably not have worked because of (i) the anatomical patency of the left distal seminal duct, and (ii) the absence of sperm in the seminal ducts. It is also worth pointing out that the latter ruled out surgical sperm retrieval from the epididymis (MESA) (Silber et al., 1988), proximal vas deferens (Hovatta and von Smitten, 1993) and distal seminal duct (Colpi et al., 1992).

The site of the obstruction therefore remains unclear. Biochemical analysis of specific substances for each level of the seminal ducts (i.e. L-carnitine, α-glucosidase, etc.) (Behre et al., 2000) was not considered because of the absence of spermatic fluid. In theory, the site of the obstruction had to be proximal to the rete testis, and multiple aetiological factors contributed to the clinical picture (i.e. neurological anejaculation plus chronic seminal duct infection, causing the anatomical alterations of the left seminal duct).

To the best of our knowledge, this is the first description of a case of sperm extraction from a whole testicle removed for chronic testicular pain. The relief from pain and the availability of sperm for a large number of ICSI cycles suggest that such an approach should be considered when untreated orchialgia and aspermia coexist in infertile men who have undergone the surgical correction of imperforate anus.

References


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