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Review

EAU Guidelines on Ejaculatory Dysfunction

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1. Introduction

Disorders of ejaculation are uncommon but important causes of male infertility. Several heterogeneous dysfunctions belong to this group, and may be of either organic or functional origin.

2. Classification and aetiology

2.1. Anejaculation

Anejaculation is the complete absence of an antegrade or retrograde ejaculation. It is caused by a failure of emission of semen from the seminal vesicles, the prostate and the ejaculatory ducts into the urethra [1]. True anejaculation is usually associated with a normal orgasmic sensation. Occasionally, e.g. in incomplete spinal cord injuries, this sensation may be altered or decreased. True anejaculation is always connected with central or peripheral nervous system dysfunctions or with drugs [2] (Table 1).

2.2. Anorgasmia

Anorgasmia is the inability to reach orgasm and this may give rise to anejaculation: its causes are usually psychological. It is often primary. Some patients report sporadic events of nocturnal emission or of ejaculation occurring during great emotional excitement unrelated to sexual activity [3].

2.3. Delayed ejaculation

Delayed ejaculation is the condition wherein an abnormal stimulation of the erected penis is necessary to obtain an orgasm with ejaculation. It may be considered a slight form of anorgasmia: both can be alternatively found in the same patient. The causes of delayed ejaculation may be psychological or organic, e.g. incomplete spinal cord lesion [3], iatrogenic penile nerve damage [4] pharmacological (antidepressants, antihypertensives, antipsychotics).

2.4. Retrograde ejaculation

Retrograde ejaculation is the total or sometimes partial absence of an antegrade ejaculation because semen passes backwards through the bladder neck into the bladder. Patients experience a normal or decreased orgasmic sensation, except in paraplegia. Partial antegrade ejaculation must not be confused with the secretion of bulbo-urethral glands. The causes of retrograde ejaculation can be subdivided as shown in Table 2.

2.5. Premature ejaculation

Premature ejaculation is the inability to control ejaculation for a ‘‘sufficient’’ length of time during

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Table 1
Aetiology of anejaculation

Neurogenic
Spinal cord injury
Cauda equina lesion
Retroperitoneal lymphadenectomy
Aortoiliac or horseshoe-kidney surgery
Colorectal surgery
Multiple sclerosis
Parkinson's disease
Autonomic neuropathy (diabetes mellitus)
Drugs-related
Antihypertensives
Antipsychotics
Antidepressants
Alcohol

vaginal penetration [5]. Although a universally accepted meaning of ''sufficient'' length of time does not exist, some patients are not able to delay ejaculation over a few coital thrusts, or even after vaginal penetration. Premature ejaculation may be strictly organic (e.g., prostatitis-related) or ''psychogenic'' (i.e., neuro-biologically based), primary or acquired, partner-related or unselective, and can be associated with erectile dysfunction. Premature ejaculation does not involve any impairment of fertility, when intravaginal ejaculation occurs.

Table 2
Aetiology of retrograde ejaculation

Neurogenic
Spinal cord injury
Cauda equina lesions
Multiple sclerosis
Autonomic neuropathy (juvenile diabetes)
Retroperitoneal lymphadenectomy
Sympathectomy
Colorectal and anal surgery
Pharmacological
Antihypertensives
Alpha1-adrenoceptor antagonists
Antipsychotics
Antidepressants
Bladder neck incompetence
Congenital defects of hemitrigone
Bladder extrophy
Bladder neck resection
Prostatectomy
Congenital dopamine beta-hydroxilase deficiency
Urethral obstruction
Ectopic ureterocele
Urethral stricture
Urethral valves or veru montanum hyperplasia

2.6. Painful ejaculation

Painful ejaculation is usually an acquired condition, often related to lower urinary tract symptoms, and sometimes causes moderate sexual dysfunctions. The painful sensation may be felt in the perineum, or urethra and urethral meatus [6]. It can be caused by ejaculatory duct obstruction, all types of chronic prostatitis/chronic pelvic pain syndrome, urethritis, urethrocele, antidepressant drugs and psychological problems.

3. Diagnosis

Diagnostic management includes the following recommended procedures:

3.1. Clinical history

Diabetes, neuropathies, traumas, urogenital infections, previous surgery and drug assumption have to be carefully checked. Particular attention must be paid to the characters of micturition and ejaculation (presence of nocturnal emission, ejaculating ability in given circumstances, primitive or acquired disorder, evolution) as well as to the psychosexual sphere (education, features of affective relationship, pre-existent psychological traumas, previous psychological therapies).

3.2. Physical examination

Genital apparatus and rectal examination with evaluation of the prostate, bulbocavernosus reflex and anal sphincter tone are conducted. Minimal neurologic tests include: sensitivity of scrotum, testes and perineum; cremasteric and abdominal cutaneous reflex; leg osteotendinous and plantar reflexes.

3.3. Post-ejaculatory urinalysis

This will determine if there is total or partial retrograde ejaculation.

3.4. Microbiological examinations

Initial, mid-stream urine, prostatic expressed secretions and/or urine after prostatic massage are cultured for evidence of prostatic infection. In cases of increased leucocytes in semen, semen culture is also suggested.

3.5. Further optional diagnostic work-up

- neurophysiological tests (bulbocavernosus evoked response and dorsal nerve somatosensory evoked potentials),
- tests for autonomic neuropathies (i.e. appreciation of temperature regulation in the feet),
- psychosexual evaluation,
- videocystometry,

- cystoscopy,
- transrectal ultrasonography,
- uroflowmetry,
- vibratory stimulation of the penis.

4. Treatment

The treatment of infertility due to disorders of ejaculation is rarely aetiological, and generally consists of retrieving spermatozoa to be used in assisted reproductive techniques (ART). In decision-making, the following aspects must be considered:

- age of patient and of his partner,
- psychological problems in the patient and his partner,
- couple's willingness and acceptance of the different fertility procedures,
- associated pathologies,
- psychosexual counseling.

4.1. Aetiological treatments

- interruption of pharmacological treatments interfering with the ejaculation,
- treatment of urogenital infections (i.e. in case of painful ejaculation),
- Selective Serotonin Reuptake Inhibitors (SSRIs) for premature ejaculation,
- psychotherapy,
- surgical correction of the urethral pathology if present,
- correction of metabolic disorders, like diabetes.

4.2. Symptomatic treatments

Premature ejaculation can be treated with topical anaesthetics to increase intravaginal ejaculation latency time or with SSRIs, like paroxetine and fluoxetine [7].

4.3. Retrograde ejaculation

In the absence of spinal cord injury, anatomic anomalies of the urethra, or pharmacological treatments, an attempt to induce antegrade ejaculation must be made by drug treatment [8,9] (Table 3).

Table 3
Drug therapy for retrograde ejaculation

Imipramine, 25–75 mg 3 times a day [10]
Ephedrine sulfate, 10–15 mg 4 times a day [8]
Midodrin, 5 mg 3 times a day
Brompheniramine maleate, 8 mg twice a day [11]
Desipramine, 50 mg every second day [12]

Alternatively, the patient can be encouraged to ejaculate when his bladder is full, to increase bladder neck closure [13].

Sperm collection from the postorgasmic urine for use in assisted reproductive techniques is suggested if:

- the drug treatment is ineffective or not tolerable due to side-effects,
- when the patient has a spinal cord injury,
- drug therapy inducing retrograde ejaculation cannot be interrupted.

Sperm retrieval is timed with the partner's ovulation. Urine must be alkalinised (pH in the range 7.2–7.8) and osmolarity must be 200–300 mOsm/kg. Then the patient is asked to have an intercourse or to masturbate. Within 10 minutes after ejaculation, urine must be voided and centrifuged, and the pellet resuspended in 0.5 ml Tyrode's or Ham's F-10 medium and immediately inseminated [14]. As an alternative, a catheter may be applied to the bladder and 10–50 ml Tyrode's or Ham's F-10 medium are instilled into it. The patient must ejaculate, and a second catheterism is performed immediately to retrieve spermatozoa. The latter treatment minimises the contact of spermatozoa and urine [15]. If the biological sperm preparation has not the needed quality to perform intrauterine insemination, the couple can be submitted to in-vitro fertilisation procedures with fresh or cryopreserved spermatozoa.

4.4. Anejaculation

Drug treatment for anejaculation due to lymphadenectomy and neuropathy is not very effective. The same statement applies to psychosexual therapy in anorgasmic subjects. In all these cases and in spinal cord injured men, vibrostimulation is the first line therapy.

In anejaculation, vibrostimulation, i.e. the application of a vibrator to the penis, evokes the ejaculation reflex [16]. Vibrostimulation requires an intact lumbosacral spinal cord segment. Complete injures and injures above T10 respond better to vibrostimulation. Once the safety and efficacy of this procedure are assessed, patients can manage themselves in their own home. Intravaginal insemination via a 10 ml syringe during ovulation can be performed. If quality of semen is poor, or ejaculation is retrograde, the couple may enter an in-vitro fertilization programme.

In case of vibrostimulation failure, electro-ejaculation is the therapy of choice [16,17]. Electro-ejaculation is an electric stimulation of the periprostatic nerves via a probe inserted into the rectum, which seems not to

be affected by reflex arc integrity. Anaesthesia is required except in cases of complete spinal cord injury. In 90% of the patients electro-stimulation induces ejaculation, which is retrograde in one third of them. Semen quality is often poor and most couples must resort to in-vitro fertilization [17].

When electro-ejaculation fails or cannot be performed, sperm retrieval from the seminal ducts may be achieved by sperm aspiration from vas deferens. In case of failure of sperm retrieval, epididymal obstruction or testicular failure must be suspected and TESE can then be performed [18].

5. Conclusions

Ejaculation disorders can be treated with a wide range of drugs and physical stimulation trials with a high percentage of efficacy. Etiological treatments for ejaculatory disorders, if present, should be offered first, before sperm collection and ART is performed. Premature ejaculation can successfully be treated with either topical anaesthetic creams or selective serotonin reuptake inhibitors. Both vibrostimulation and electroejaculation are effective methods for sperm retrieval in men with spinal cord injury.

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