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Naveenchandra Acharya
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Handbook of Male Infertility & Andrology



Foreword
SK Singh

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Intracavernosal Injection

3

INTRACAVERNOSAL INJECTION OF VASOACTIVE DRUGS—PRACTICAL APPROACH

One of the most dramatic changes in urology has been the introduction of intracavernous injection of vasoactive drugs for the diagnosis and treatment of ED. At the 1983 annual meeting of the American Urological Association, Brindley personally demonstrated erection after injection of phenoxybenzamine (with much surprise and shock to the audience). Subsequently, Zorgniotti and Lefleur (1985) reported their experience instructing patients in the technique of autoinjection of a mixture of papaverine and phentolamine for home use.

Intracavernosal injections provide an effective therapy for men with erectile dysfunction who cannot take oral agents or for whom oral agents are not effective.

DRUGS AND PATHOPHYSIOLOGY

Papaverine

Papaverine, an alkaloid isolated from the opium poppy, exerts an inhibitory effect on PDE, leading to increased cyclic AMP and cyclic GMP in penile erectile tissue. Papaverine also blocks voltage-dependent calcium channels, thus impairing calcium influx and it may also impair calcium-activated potassium and chloride currents. All these actions relax cavernous smooth muscle and penile vessels. Papaverine is metabolized in the liver and the plasma half-life is 1 to 2 hours.

Alprostadil (Prostaglandin E_1)

Alprostadil is the synthetic form of a naturally occurring fatty acid (i.e. alprostadil refers to the exogenous form, PGE_1 to the endogenous compound). It causes smooth muscle relaxation, vasodilation and inhibition of platelet aggregation through elevation of intracellular cyclic AMP. Alprostadil is metabolized by the enzyme prostaglandin-15-hydroxydehydrogenase, which has been shown to be active in human corpus cavernosum. After intracavernous injection, 96% of alprostadil is locally metabolized within 60 minutes and no change in peripheral blood levels has been observed.

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How to Give Injection

The injection may be given anywhere from the base of the penis to two-thirds of the way down the penile shaft at the 10 o'clock and 2 o'clock locations on the upper side of the penis away from the urethra and the head of the penis. Injections are rotated within that area and the side of the injection is alternated with each injection.

PATHOPHYSIOLOGY

Preparation

Methodology: Start with 29–30 G Insulin syringe for the injection therapy.

Papaverine: It can be started with 15 and given till 60 mg. Inject in any corpus.

Bimix: Add chlorpromazine (4 ml papavarine to 0.1 ml chlorpromazine combination) start with 0.1 to 0.2 ml and then gradually increased. Again the injection can be given in any one of the corpus.

Kulkarni VR, Shah RS, Gupte DM, Mehte MK. A clinical study of the erection-inducing effects of intracavernosal chlorpromazine. *Int J Imp Res 1996.*

Trimix: Add PGE-150 mcg (conventional vial contains 500 mcg so we will have to take 0.1 ml).

Procedure

1. Start in lying down position.
2. Give complete privacy.
3. Ask patient to fantasize and stroke his penis (patient allowed to read erotic materials).
4. If no response after 15 minutes ask him to stand erect and repeat the procedure.
5. Some men are known to have late response so minimum wait till 30–45 minutes advisable.
6. If no benefit call the patient at next sitting and increase the dose.

HOME ADMINISTERED INJECTION

1. If the diagnostic testing helps then patient is started on home administered injection. Refilled insulin syringes can be given. This can be stored at room temperature for 6 months.
2. Good sexual counseling and involvement of female partner is essential.
3. Sometimes obese person cannot do it on his own so wife can give injection while husband stretches the penis.
4. The patient has to be warned about priapism. It is always good for patient to have access to the andrologist for any complications.
5. As priapism is rare the patient needs reassurance and first 2–3 injections can be started in clinic to gain confidence and allay fears about the injection.

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PATIENT ACCEPTANCE AND DROP-OUT

In long-term studies, 13–60% of patients drop-out for a number of reasons. These include loss of interest, loss of partner, poor erectile response, penile pain, concomitant illness (Many obese individuals are reluctant for injection because abdominal fat apron prevents them good vision of the penis. And the partner initially may help but later on gives up thinking this as more of mechanical process than romantic emotional encounter), recovery of spontaneous erection and ultimate choice of other therapy (Many people in the interim go for penile implant without having to resort to injection every time they have sexual act).

SERIOUS ADVERSE EFFECTS

Priapism and fibrosis are the two more serious side effects associated with intracavernosal injection therapy. Some people face pain on injection and this can be a reason for abandoning the injection therapy.

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Salient Features

- Presents the comprehensive text in straightforward, clear and easy-to-grasp language
- Contains practical tips for the management of common andrological problems
- Includes the highly effective procedures such as vasectomy reversal, microsurgical varicocelectomy and seminal vesiculoscopy including the comparison with *in vitro* fertilization-intracytoplasmic sperm injection (IVF-ICSI)
- Gives practical details about surgical procedures
- Describes the ever-neglected problems of female sexual dysfunction in details for the aspiring sexologists and gynecologists
- Covers pharmacotherapy in andrology separately
- Helpful for general practitioners, urologists, and budding andrologists and targets for practicing urologists, postgraduate students of urology and aspiring sexologists.



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He has expertise in microsurgical reconstructive surgery in male infertility. He was honored by Best Paper Award as the Co-author, American Urological Association in 2008; Best Paper Award (2008) in Asian Congress of Urology; Young Investigator Award (2007); New Delhi by Clinical Biochemistry Association for his work in male infertility genetics; and Rashtriya Gaurav Award (2009) for excellence in the field of medicine by International Friendship Society of India. He is member of the editorial team of Asia-Pacific Society of Sexual Medicine (APSSM).

He delivered the prestigious "Young Scientist Award Lecture", 14th biennial meeting of APSSM, Japan. He was honored with Chakraborty Fellowship by Indian-American Urological Association and completed Perceptorship from Cleveland Clinic, Ohio, in 2014.



Sharmila Majumdar MS in sexuality PhD is working at Ramayya Pramila Urology and Laparoscopy Hospitals, Hyderabad, Telangana, India. She was trained under eminent Psychiatrists and Sexologists at NJC, USA. As a Clinical Psychoanalyst, she has been trained in various aspects of mental health including diagnosis of different forms of psychopathology, psychoanalysis and psychotherapy with microspecialization in sexuality.

Presently, she is conducting Research on Menopausal and Perimenopausal Women's Sexual Attitude in India and erectile dysfunction in substance-dependent patients.



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He was awarded the Dantec Prize by the British Association of Urological Surgeons.

He has set-up Ramayya Pramila Urology and Laparoscopy Hospitals, which is one of the best equipped centers for urology in the country.

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