

Evaluation of Transurethral Alprostadil for Safety and Efficacy in Men with Erectile Dysfunction

APICHAT KONGKANAND, M.D.*,
KRISDA RATANA-OLARN, M.D.***,
SUPOJ WUDDHIKARN, M.D.****,
SOMBUN LUENGWATTANAKIT, M.D.***,

ANUPUN TANTIWONG, M.D.**,
SATIT RUENGDILOKRAT, M.D.****,
JULIN OPANURAKS, M.D.*,
SUPON SRIPALAKIT, M.D.****

Abstract

A multicenter study conducted in 5 trial centers, for the safety and efficacy of transurethral alprostadil (Pellet) in 90 subjects. The end results show quite good and the product was satisfactory and safe for all ages. Although there are multiple side effects that seemed to discourage the participants and caused them to dropout, MUSE does work but needs good understanding of the use of the device. MUSE is another alternatives for those who unable to use oral medication or those who require immediate action but need some dexterity.

Key word : Thai ED

KONGKANAND A, TANTIWONG A, RATANA-OLARN K, et al
J Med Assoc Thai 2002; 85: 223-228

It has been documented that between the corporal compartments of the penis shaft there is vascular communication which enables vasoactive agents administered topically to the urethral mucosa to be transferred to the erectile tissues^(1,2). So when

the alprostadil pellet which are fixed in the device is dropped into the urethra and massaged afterwards, absorption will take place into the corpora body.

MUSE (Medicated urethral system for erection) is a single use transurethral system for deli-

* Department of Urology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330,

** Department of Urology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700,

*** Department of Urology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok 10400,

**** Department of Urology, Parmongkut Hospital, Bangkok 10400,

**** Department of Urology, Suandok Hospital, Chiang Mai, 50000, Thailand.

very of alprostadil, it consists of a translucent applicator with a hollow stem measuring 3.2 cm x 3.5 mm, and a medicated pellet 3 x 6 mm and 1.4 mm, in diameter. There are 3 strengths available 250, 500, 1,000 micrograms⁽³⁾.

MATERIAL AND METHOD

Patients who has had erectile dysfunction for at least 6 months and were age 18 or above with good criteria, agree to use only muse and have trial in clinic first, before sending home with the medicine.

Scale for titration. Assessment scales.

Score 0 no response

2 some enlargement

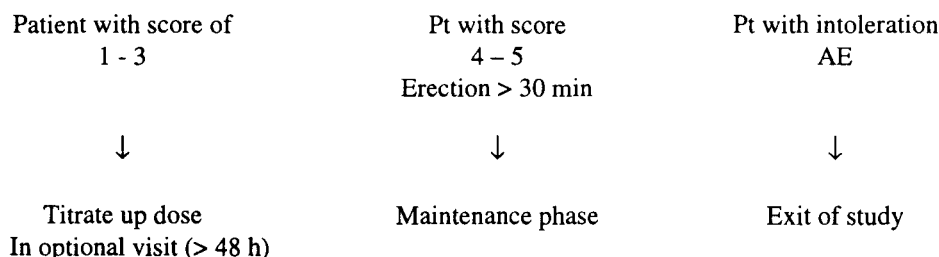
3 full enlargement but not sufficient for intercourse

4 erection sufficient for intercourse

5 rigid erection

Measuring BP and pulses at 0, 15, 30, 45 and 60 min. After the urethral insert.

Flow chart



Note

Intolerance of adverse effect

- Very severe side effect.
- Systolic BP is depressed > 30 per cent from baseline, dizziness, tachycardia, sweating.

Inclusion criteria

- Aged 18 and above.
- Voluntary treatment only with MUSE.
- No other treatment allowed.
- Physical examination and lab study within normal limits.

Exclusion criteria

- Allergic to alprostadil.
- Sick cell trait or sickle cell anemia or multiple myeloma.
- History of MI, congestive heart failure or unstable angina in the past 6 months.
- Urethral stricture or previous abnormal anatomy.
- Recent urinary tract infection.
- Current penile implant.

Table 1. Number of case participated in the treatment of response.

	Titration period	Home used period
Entered	90	59
Loss of FU	12	8
Remained	78	51
Failed	19	10
Responded	59	41
% of response	75.6	80.4

Table 2. Cases with previous treatment of erectile dysfunction.

	Case	%
Never been treated	64	71.31
Caverject	15	16.7
Viagra	7	7.8
Andriole	3	3.3
Yohimbine	1	1.1

Patients were screened at the first visit, physical examination was done first and complete blood count (CBC), liver profile, prostate specific antigen (PSA) and urinalysis were done in the routine manner.

Those who passed the screen test were accepted to test the titration dose which started at 250 micrograms to 500 micrograms to 1,000 micrograms respectively but the schedule was more than 48 hours apart for each visit.

The patients were then followed for 2 sets of MUSE per week for use at home and then had to complete a diary within 12 h, after MUSE insertion ; during the clinic titration visit the patients watched an introductory video of MUSE, informed consent was obtained at the first visit and information on the patient's diary, if he was happy with the process he could volunteer to join the study.

Patients were free to withdraw from the program anytime they felt uncomfortable. They could contact the investigator anytime by telephone.

Patients were instructed to escalate the medicated doses if necessary ninety patients were recruited in the study from 5 centers. The alprostadil was titrated in stepwise fashion in the clinic from 250 to 1,000 micrograms.

There were 12 dropouts due to reasons unrelated to the efficacy of MUSE 78 patients completed the titration and 60 subjects (76.92%) had full responses with scores of 4 or 5.

Technique

It is interesting to notes that the procedure of insertion of MUSE, by voiding to empty the bladder so urine will be wet in the urethra, suitable

to introduce the pellet. Also for those who needed more than urine, we recommended the use of a few drops of KY jelly on the glans penis to facilitate the lubrication. A rubber band used normally to tie down a kitchen bag or commercially available as "Actis" is very good to promote the erection. The procedure was arranged as follows :

1. Void to empty the urethra.
2. Put rubber band at the base of the penis.
3. Insert the MUSE pellet.
4. Massage the penis to facilitate the absorption.
5. Normally it takes about 5-10 min to erect.
6. Once the erection has been achieved with good rigidity the rubber band is removed.

The procedure should be done while standing because the erection and fixation in the corpora will be much better and will last longer. The erection normally occurs approximately 10 minutes after massage.

RESULTS

Of 78 man, 59 man responded with a score of 4-5 rigidity for the home treatment phase, 19 patients dropped out. 51 patients had at least one successfully intercourse during the home treatment, 8 patients failed to show up and 22/59 patients responded to 500 micrograms (37%) 37/59 responded to 1000 micrograms (63%), 41 patients continue to show good results by having at least one sexual intercourse during the 3 months follow-up, 10 patients failed to show good results and 3 patients

Table 3. Result of the titration phase.

-
- 90 patients enrolled in the study.
 - 78 patients completed the titration phase.
 - 12 patients dropped out from the study.
 - 59 patients of 78 patients (75.6%) responded at scale 4-5 rigidity.
 - 37 patients of 59 patients (63%) used 1000 mcg.
 - 22 patients of 59 patients (37%) used 500 mcg.

*** Explanation**

No patients used 250 microgram at the trial and 12 patients were not willing to continue due to poor results or did not respond. 59 patients responded at a scale of 4-5 rigidity, which was excellent for penetration.

- 37 patients used 1,000 microgram to respond.
 - 22 patients used 500 microgram to respond.
-

Table 4. Result of the 3 months home phase.

-
- 51 patients completed the home phase.
 - 8 patients were lost to follow-up.
 - 41 of 51 patients (80.4%) responded by having sex at least once.
 - 27/41 (66%) used 1000 mcg.
 - 14/41 (34%) used 500 mcg.
-

had adverse effects. The most common side effect being penile pain, scrotal pain and dysuria. There was no abnormal lab study on post alprostadil usage. All the patients with home treatment showed good result at $41/59 = 69.5$ per cent. If those who failed to show up for treatment were removed the number would be much better at $41/51 = 80.4$ per cent.

Side effects

There are multiple side effects but the patients were able to continue. The most common side effects were penile pain, some discomfort in the urethra, scrotal pain, mild terminal dysuria bleeding per urethra which mostly happened secondary to the device were rare and very light. The side effects were minor compared to the benefit they received in treatment of ED. There was no case of prolonged erection and priapism.

DISCUSSION

Treatment of ED by way of the topical route is the ideal method but it seems the best medicine or device is not available yet. The patch like bandage on the penis, one of the available options, seems good but the results are not good, Urethral insert alprostadil was very good for many individuals(3,4,6-8), but did not work for others(5). Burning in the urethra and scrotal pain with occasional dysuria tend to discourage patients. Refrigeration and removal 30 min before use and timing are important. Traveling with MUSE in a cooler package on a trip seemed to discourage some users but with 90, volunteers with few dropouts, the remainder were satisfied and believes in the MUSE. The medi-

Table 5. Adverse effects report of 78 patients.

	Number of cases	%
Penile pain	18	23
Discomfort	5	6
Scrotal pain	3	4
Dysuria	3	4
Bleeding	3	4
Perineum pain	3	4
Numbness	1	1
Total	33	46

Table 6. Result of the titration phase.

-
- Reasons for dropout
- 5 cases refused to do the insertion.
 - 5 cases for personal reasons.
 - 1 case recovered from ED.
 - 1 case underwent renal surgery.
-

cine is safe and efficacy was good. On titration at the clinic 75.6 per cent responded to the treatment but home use with 41 out of 51 patients, the result was 80.4 per cent.

SUMMARY

MUSE is a safe, well tolerated well accepted and effective treatment of ED, provided the technique is fully explained and understanding. The dose is mostly 500 micrograms to 1,000 micrograms.

Complications were few and with minor side effects.

REFERENCES

1. Vardi Y, Tejada SI. Functional and radiologic evidence of vascular communication between the spongiosal and cavernosal compartments of the penis. *Urology* 1997; 49: 749-52.
 2. Breza J, Abosief S, Lue TF. Anatomy of the penis. In : Montague DK, editor, *Atlas of the urologic clinics of North America*. Philadelphia : WB Saunders, 1993: 1-8.
 3. Padma - Nathan H, Hellstrom WJ, Kaiser FE, et al. Treatment of men with erectile dysfunction with transurethral alprostadil Medicated Urethral System for Erection (MUSE) Study Group. *N Engl J Med* 1997; 336: 1-7.
 4. Hellstrom WJ, Bennett AH, Gesimdjeot N, et al. A double-blind, placebo-controlled evaluation of the erectile response to transurethral alprostadil. *Urology* 1996; 48: 851-6.
 5. Fulgham P, Cochran J, Denman J, et al. Disappointing results with transurethral alprostadil in men with erectile dysfunction (ED) in a urology practice setting. *J Urol* 1998; 159 (Suppl 5): 237.
 6. Mulhall JP, Parker M. Evaluation of the consistency of response to intra-urethral prostagladin (MUSE) during at - home use. *J Urol* 1998; 159 (Suppl 5): 238.
 7. Engel JD, McVary KT. Transurethral alprostadil as therapy for patients who with drew from or failed prior intracavernous injection therapy. *Urology* 1998; 51: 687-92.
 8. Teloken C, Ros CD, Sogari P, et al. Response and adherence to treatment with intraurethral alprostadil (MUSE) in organic erectile dysfunction. *Int J Impot Res* 1998; 10 (Suppl 3): S62.
 9. Yong - Chan Kim in *Transurethral Alprostadil with the MUSE delivery system for Erectile Dysfunction in APSIR Book*. Page 144. Edited by, Yong - Chan Kim, M.D., Ph.D, Hui - Meng Tan, 1999 ADIS.
-

การศึกษาเพื่อดูประสิทธิภาพ และความปลอดภัยของยา MUSE (Medicated Urethral System for Erection) ในชายไทยที่หย่อนสมรรถภาพทางเพศ

อภิชาติ กงกะนันท์, พ.บ.*, อนุพันธ์ ตันติวงศ์, พ.บ.**,
กฤษฎา รัตนโอฬาร, พ.บ.***, สติชัย เรืองดิษฐ์รัตน์, พ.บ.****, สุพจน์ วุฒิการณ์, พ.บ.*****,
จุรินทร์ โอภาณุรักษ์, พ.บ.*, สมบุญ เหลืองวัฒนกิจ, พ.บ.***, สุปล ศรีพลากิจ, พ.บ.*****

การศึกษาเพื่อดูประสิทธิภาพ และความปลอดภัยของยา การศึกษาโรคหย่อนสมรรถภาพทางเพศในชายไทย 90 คน ศึกษาใน 5 สถาบัน โดยการใช้ Alprostadil ซึ่งเป็น Prostaglandin E1 ใช้สอดเข้าทางหลอดปัสสาวะ หลังจากนั้น จะดูดซึมเข้าไปในแกนอวัยวะเพศ จะเกิดการแข็งตัวหลังการสอดยาแล้ว ภายในเวลาประมาณ 10 นาที

การศึกษาพบว่าในชายไทย 90 คน มี 19 คนที่ไม่ร่วมมือในการศึกษา หลังจากทดลองในคลินิกแล้ว จำยาไป ให้ใช้ที่บ้าน ได้ผล 69% แต่ถ้าหักลบผู้ที่ไม่ร่วมมือออกไป นับว่าได้ผลมากถึง 80% ที่เดียว ถึงแม้จะมีผลข้างเคียงหลายอย่าง เช่น ปวดอวัยวะเพศ, ปวดอวัยวะ, ปัสสาวะแสบ แต่ก็มีการเล็กน้อย พอทนไหว, พอรับได้, และอาสาสมัครผู้เข้ารับ การรักษาคิดว่ายาให้ผลดี แต่ควรได้รับการแนะนำ และทำความเข้าใจให้ดีเสียก่อน ผู้ที่ทนรับผลข้างเคียงไม่ได้ จะไม่ชอบ ยาตัวนี้ทีเดียว

ในการรักษา ผู้วิจัยคิดว่า การแนะนำผู้ป่วยให้ได้รับยา และวิธีใช้ที่ถูกต้อง จะทำให้ผู้ป่วยมีความมั่นใจ และมีความ เชื่อมั่นในการรักษาอย่างดียิ่ง ถึงแม้ว่าจะมีผลข้างเคียงบ้าง แต่ก็ยังรับการรักษาต่อไป

คำสำคัญ : ไทย ED

อภิชาติ กงกะนันท์, อนุพันธ์ ตันติวงศ์, กฤษฎา รัตนโอฬาร, และคณะ
จดหมายเหตุทางแพทย์ ๙ 2545; 85: 223-228

* คณะแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย, กรุงเทพฯ ๙ 10330

** คณะแพทยศาสตร์ศิริราชพยาบาล, มหาวิทยาลัยมหิดล, กรุงเทพฯ ๙ 10700

*** คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี, มหาวิทยาลัยมหิดล, กรุงเทพฯ ๙ 10400

**** คณะแพทยศาสตร์ โรงพยาบาลพระมงกุฎเกล้า, กรุงเทพฯ ๙ 10400

***** คณะแพทยศาสตร์ โรงพยาบาลสวนดอก, เชียงใหม่ 50000