

# *Acta Medica Okayama*

---

*Volume 59, Issue 6*

2005

*Article 6*

DECEMBER 2005

---

## Intracavernous injection of prostaglandin E1 is effective in patients with erectile dysfunction not responding to phosphodiesterase 5 inhibitors.

Atsushi Nagai\*

Norihiro Kusumi†

Hiromu Tsuboi‡

Kazushi Ishii\*\*

Takashi Saika††

Yasutomo Nasu‡‡

Hiromi Kumon§

\*Okayama University,

†Okayama University,

‡Okayama University,

\*\*Okayama University,

††Okayama University,

‡‡Okayama University,

§Okayama University,

# Intracavernous injection of prostaglandin E1 is effective in patients with erectile dysfunction not responding to phosphodiesterase 5 inhibitors.\*

Atsushi Nagai, Norihiro Kusumi, Hiromu Tsuboi, Kazushi Ishii, Takashi Saika, Yasutomo Nasu, and Hiromi Kumon

## Abstract

We report on 64 patients who did not achieve erections adequate for satisfactory sexual intercourse from among a total of 243 patients who were prescribed PDE5 inhibitors for erectile dysfunction (ED). Intracavernous injection (ICI) of PGE was performed in this non-responder group. An ICI of 20 or 40 mcg of PGE1 in 1 ml saline was performed and the responses evaluated. Forty-nine out of 64 (77 percent ) cases responded to 20 mcg of PGE1. Forty mcg of PGE was injected into the 15 non-responding cases, and 9 patients responded favorably. The overall effective rate was 58/64 (91 percent ). No major adverse effects were observed.

**KEYWORDS:** prostaglandin E1, intracavernous injection, erectile dysfunction, PDE5 inhibitors

---

\*PMID: 16418771 [PubMed - indexed for MEDLINE]

Copyright (C) OKAYAMA UNIVERSITY MEDICAL SCHOOL

*Short Communication*

## Intracavernous Injection of Prostaglandin E<sub>1</sub> is Effective in Patients with Erectile Dysfunction Not Responding to Phosphodiesterase 5 Inhibitors

Atsushi Nagai, Norihiro Kusumi, Hiromu Tsuboi, Kazushi Ishii,  
Takashi Saika, Yasutomo Nasu, and Hiromi Kumon

*Department of Urology, Okayama University Graduate School of Medicine  
and Dentistry, Okayama 700-8558, Japan*

We report on 64 patients who did not achieve erections adequate for satisfactory sexual intercourse from among a total of 243 patients who were prescribed PDE5 inhibitors for erectile dysfunction (ED). Intracavernous injection (ICI) of PGE<sub>1</sub> was performed in this non-responder group. An ICI of 20 or 40 mcg of PGE<sub>1</sub> in 1 ml saline was performed and the responses evaluated. Forty-nine out of 64 (77%) cases responded to 20 mcg of PGE<sub>1</sub>. Forty mcg of PGE<sub>1</sub> was injected into the 15 non-responding cases, and 9 patients responded favorably. The overall effective rate was 58/64 (91%). No major adverse effects were observed.

**Key words:** prostaglandin E<sub>1</sub>, intracavernous injection, erectile dysfunction, PDE5 inhibitors

**E**rectile dysfunction (ED) is a not uncommon condition caused by psychiatric and physical disorders. Since their introduction, Phosphodiesterase 5 (PDE5) inhibitors have become the first choice of treatment for ED, and have efficacy rates of 68-79% [1-3]. However, there are still non-responders and contraindications for this oral therapy. The intracavernous injection (ICI) of prostaglandin E<sub>1</sub> (PGE<sub>1</sub>) is a safe and effective treatment option for such patients. The referred effectiveness of ICI of PGE<sub>1</sub> is 68-88% [4-6]. A study of ICI of PGE<sub>1</sub> carried out in our institute is reported.

From March 1999 to March 2004, PDE5 inhibitors were prescribed to 243 ED patients in the outpatient clinic at the Okayama University Hospital. There were 64/243 (26%) cases in which PDE5 inhibitors were not effective

in achieving erections adequate for satisfactory sexual intercourse. We performed ICI of PGE<sub>1</sub> in this group of 64 patients. Their ages were between 23 and 84 (mean 54.5) years. ICI of 20 mcg of PGE<sub>1</sub> in 1 ml saline was performed and the response was evaluated 20 min later. The therapeutic effects were evaluated according to the criteria laid down by the International Society for Sexual and Impotence Research (ISSIR), and patients who obtained responses 2 and 3 were considered responders. We performed ICI of 40 mcg of PGE<sub>1</sub> in the failed group of 15 cases.

Forty-nine patients responded to 20 mcg of PGE<sub>1</sub> and 9 patients needed 40 mcg. The over-all effective rate was 58/64 (91%). Responses 2 and 3 were obtained in 21 and 37 cases respectively; no prolonged erection was observed. In the responder group, 10 had functional ED and 48 organic ED. In the final non-responder group of 6 cases, all patients had organic ED, including 5 who were diabetic. No critical adverse effects were observed in any of the patients.

Received March 17, 2005; accepted March 25, 2005.

\*Corresponding author. Phone: +81-86-235-7387; Fax: +81-86-231-3986  
E-mail: [atsnagai@md.okayama-u.ac.jp](mailto:atsnagai@md.okayama-u.ac.jp) (A. Nagai)

Shabsigh *et al.* reported success rates of 85.1–89.6% by intracavernous alprostadil alfadex in at-home therapy after sildenafil failed, and the most common side effect was penile pain in 29.4% of the patients [8]. In our study, ICI was performed by doctors in the out-patient clinic and not by self injection at home, but our results were similar to those of Shabsigh *et al.* PGE<sub>1</sub> therapy can be used effectively and safely in patients who fail to respond to PDE5 inhibitors. At present in Japan, self ICI of PGE<sub>1</sub> is not permitted by the Ministry of Health, Labour and Welfare. Therefore, a long-term evaluation of the effects of ICI of PGE<sub>1</sub>, including self injection in Japan, is needed. Virag *et al.* described an efficacy of 84.8% in an 8-year self-ICI study. There were no significant differences in the results of ICI therapy for ED between other countries and Japan. Therefore, we conclude that this treatment can be successfully carried out in Japan.

## References

1. Katz SD, Parker JD, Glasser DB, Bank AJ, Sherman N, Wang H and Sweeney M: Efficacy and safety of sildenafil citrate in men with erectile dysfunction and chronic heart failure. *Am J Cardiol* (2005) 95: 36–42.
2. Raina R, Lakin MM, Agarwal A, Sharma R, Goyal KK, Montague DK, Klein E and Zipper CD: Long-term effect of sildenafil citrate on erectile dysfunction after radical prostatectomy: 3-year follow-up. *Urology* (2003) 62: 110–115.
3. Montorsi F, Hellstrom WJ, Valiquette L, Bastuba M, Collins O, Taylor T, Thibonnier M, Homering M and Eardley I; North American and European Vardenafil Groups: Vardenafil provides reliable efficacy over time in men with erectile dysfunction. *Urology* (2004) 64: 1187–95.
4. Raina R, Lakin MM, Thukral M, Agarwal A, Ausmundson S, Montague DK, Klein E and Zipper CD: Long-term efficacy and compliance of intracorporeal (IC) injection for erectile dysfunction following radical prostatectomy. SHIM (IIEF-5) analysis. *Int J Impot Res* (2003) 15: 318–322.
5. Richter S, Vardi Y, Ringel A, Shalev M and Nissenkorn I: Intracavernous injections: still the gold standard for treatment of erectile dysfunction in elderly men. *Int J Impot Res* (2001) 13: 172–175.
6. The European Alprostadil Study Group: The long-term safety of alprostadil (prostaglandin-E1) in patients with erectile dysfunction. *Br J Urol* (1998) 82: 538–543.
7. Shabsigh R, Padma-Nathan H, Gittleman M, McMurray J, Kaufman J and Goldstein I. Intracavernous alprostadil alfadex (EDEX/VIRIDAL) is effective and safe in patients with erectile dysfunction after failing sildenafil (Viagra). *Urology* (2000) 55: 477–80.
8. Gutierrez P, Hernandez P and Mas M: Combining programmed intracavernous PGE1 injections and sildenafil on demand to salvage sildenafil nonresponders. *Int J Impot Res* (2005) 17: 354–358.