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To study the effectiveness of intralesional verapamil in resolution of plaque of peyronie's disease

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Abstract---The prospective study was conducted to study the role of intralesional verapamil in resolution of plaque of peyronies disease. Verapamil's effectiveness is predicated on its ability to affect fibroblast function on multiple levels, including cell proliferation, extracellular matrix protein synthesis and secretion, and collagen breakdown. Calcium antagonists may thus have the potential to reduce, halt, or even reverse plaque formation and Peyronie's disease progression. According to the intralesional verapamil injection therapy, the majority of men with Peyronie's disease who receive treatment experience long-term pain relief, curvature reduction, and enhanced sexual performance. Intralesional verapamil injection therapy resulted in reduction of pain in 92% cases, reduction of plaque size in 80% cases, reduction of penile curvature in 75% cases and improvement in erectile dysfunction in 60% cases.

Keywords---penile deformity, intralesional verapamil, erectile dysfunction.

Introduction

Peyronie's disease is a connective tissue disorder, characterised by the formation of a fibrotic lesion or plaque in the tunica albuginea, which leads to penile deformity¹. The aetiology of peyronie's disease is unknown. The most widely accepted hypothesis proposed by Gonzalez-Cadavid *et al*², is repetitive microvascular injury or trauma to the tunica albuginea. Peyronie's disease starts with an acute inflammatory process. The progression of inflammation causes a proliferation of the tunical fibroblasts, some of which differentiate into myofibroblasts with a disproportionate production of collagen, the persistence of fibrin, and resulting elastin fragmentation. The persistent inflammatory response causes connective tissue to remodel into a dense fibrotic plaque, which develops a curvature and severe bending, preventing vaginal contact. Diabetes, hypertension, lipid abnormalities, ischemic cardiopathy, erectile dysfunction, smoking, and excessive alcohol intake are all comorbidities and risk factors for the condition.³ In 9 percent to 39 percent of people with peyronie's disease, dupuytren contracture is described.⁴ The natural course of peyronie's disease indicates that penile curvature stabilizes in 47%-67% of patients or worsens in 30%-50% of patients. As well, spontaneous improvement is reported in only 3%-13% of patients⁵. In later phases, once the plaque becomes calcified the possibilities that penile curvature can be corrected are not as likely as in the early stage of the disease. Thirty-five percent to forty-five percent of patients can experience referred pain at early stages of the disease. However, in 90% of men the pain tends to abate with time, usually during the first 12 month after onset.

Material and Methods

A Prospective study was conducted on patients attended surgery OPD of S.N. Medical College, Agra with diagnosis of Peyronie's disease in period of 2years (2019-2021).

Inclusion Criteria

- Age 20 Years to 60 years
- Have symptoms of Peyronie's disease (pain, curvature or plaque in penis).

Exclusion Criteria

- Penile curvature >30°
- Size of plaque > 4 cm
- Duration of plaque > 1year
- Calcified plaque
- Has previously undergone surgery for Peyronie's disease
- Uncompensated diabetes

Penile block was given with 2% lidocaine. 10 mg of verapamil diluted to 10cc in normal saline was injected into the plaque with a 10-ml syringe and a 25 gauge needle by multiple puncture technique so that drug was uniformly distributed through the plaque. A total of 24 injections administered every 2 weeks over a period of 48 weeks. Blood pressure and heart rate were continuously monitored during the procedure. To prevent incidental injury to dorsal nerve fibers or dorsal arteries, the needle is inserted into the dorsolateral or lateral side depending upon the location of plaque. Precaution will be taken not to instill the drug into the corpus cavernosum. Slight gentle pressure into the syringe will be required for injection into the tunica albuginea, whereas instillation into corpus cavernosum does not require pressure.

Complications of intralesional Verapamil injection like ecchymosis, light headedness and nausea were noted in few patients. Statistical Analysis- All the quantitative variables like age, plaque size were expressed using descriptive statistics like mean & standard deviation and 95% confidence interval. All qualitative variables were expressed in terms of proportion. Statistical analyses were performed using tables and bar graphs with significant value.

Table-1: Distribution of cases according to pre therapeutic parameter

Pain during erection	NO.	%
POSITIVE	50	100
NEGATIVE	0	0
TOTAL	50	100

As shown in table-1 pain during erection was present in 100% cases.

Table-2: Distribution of cases according to plaque size

Plaque size (cm.)	NO.	%
0-1	6	12
1-2	14	28
2-3	20	40
3-4	10	20
TOTAL	50	100

Above table shows plaque size 0-1 cm. 6 cases (12%), 1-2 cm. 14 cases (28%), 2-3 cm. 20 cases (50%) and 3-4 cm. 10 cases (20%).

Table-3: Distribution of cases according to plaque curvature

Penile curvature (degree)	NO.	%
0-10	14	28
11-20	22	44
21-30	14	28
TOTAL	50	100

Above table shows plaque curvature 0-10 degree in 14 cases (28%), 12-20 degree in 22 cases (44%) and 21-30 degree in 14 cases (28%) respectively.

Table-4: Distribution of cases according to erectile dysfunction

Erectile dysfunction	NO.	%
POSITIVE	20	40
NEGATIVE	30	60
TOTAL	50	100

As per table-7 erectile dysfunction present in (40%) cases and (60%) found absent.

Table-5: Distribution of cases according to pain during erection (post therapeutic parameter)

Pain during erection	NO.	%
POSITIVE	4	8
NEGATIVE	46	92
TOTAL	50	100
MEAN±SD	25±21	
P VALUE	0.01	

Post therapeutic pain (after taking 12 month of treatment). Pain was absent in 46 cases (92%) and some degree of pain was present in 4 cases (8%).

Table-6: Distribution of cases according to plaque size (post therapeutic parameter)

Plaque size (cm.)	NO.	%
0-1	21	42
1-2	18	36
2-3	10	20
3-4	4	8
TOTAL	50	100
MEAN±SD	8.62±10.40	
P VALUE	0.025	

Table-11 shows plaque size post therapeutic was reduced in 80% of cases which 0-1 cm. 21 cases (42%), 1-2 cm. 18 cases (36%), 2-3 cm. 10 cases (20%) cases while plaque size was reduced in 36% cases, 3-4 cm. (8%).

Table-7: Distribution of cases according to penile curvature (post therapeutic parameter)

Penile curvature (degree)	NO.	%
0-10	35	70
11-20	9	18
21-30	6	12

TOTAL	50	100
MEAN±SD	14.82±8.29	
P VALUE	0.03	

Above table shows penile curvature 0-10 degree 35 cases (70%), 11-20 degree 9 cases (18%) and 21-30 degree 6 cases (12%) respectively.

Table-8: Distribution of cases according to erectile dysfunction (post therapeutic parameter)

Erectile dysfunction	NO.	%
POSITIVE	8	16
NEGATIVE	42	84
TOTAL	50	100
MEAN±SD	25±13	
P VALUE	0.036	

Above table shows erectile dysfunction was present in 8 (16%) cases post therapeutically and absent in 42 (84%) cases ($p < 0.05$) respectively. Reduction in erectile dysfunction was found in 60% of cases ($p < 0.05$).

Result

Hence the intralesional verapamil has a significant role in treatment of peyronie's disease.

Discussion

In peyronie's disease severe deformities and erectile dysfunction are best treated surgically, for light and medium curvatures, pain and slow disease progression is preferred a conservative approach by oral and intralesional therapy.⁶ Reports on the efficacy of intralesional verapamil were varying. In 1994, Levine et al.⁷ reported that pain resolved in 97% of the patients who presented with pain after a mean of 2.5 injections. After therapy, 76% reported a subjective decrease in curvature, 9.5% noted an increase and 14.5% remained unchanged. Of the treated patients 72% reported an improvement in the ability to engage in coitus. Objective measurements demonstrated that curvature was decreased in 54% of the patients, increased in 11% and remained unchanged in 34%.

In our study fifty patients were included ($n=50$) and the mean age of patients was 41.6 years. A chief complaint of cases i.e. pain during erection was found in 100% cases and penile deformity was found in 100% cases and erectile dysfunction was found in 40% cases. In our study after treatment with intralesional verapamil was found that pain during erection was reduced in 92% cases, reduction of plaque size in 80% cases, reduction of penile curvature in 75% cases and improvement in erectile dysfunction in 60% cases which was statistically significant ($p < 0.05$).

Conclusion

In our study it was found that intralesional verapamil therapy resulted significantly reduction in pain during erection, penile curvature, plaque size and improvement in erectile dysfunction in peyronie's disease.

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