

Efficacy Comparison of Intralesional Inj. Interferon Alpha 2B (2 MU) against Intralesional Inj. Interferon Alpha 2B (3 MU) in Treatment of Peyronie's Disease

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ABSTRACT

Introduction: In Peyronie's Disease, fibrous plaque is formed which has an excessive amount of collagen, fibroblastic proliferation and elastin framework alteration.

Objective: To compare the effect of Intralesional Inj. Interferon alpha 2b (2 MU) against Intralesional Inj. Interferon alpha 2b (3 MU) on plaque size, penile deviation, erectile function and pain during erection in patients having Peyronie's disease

Methods: It was comparative interventional/longitudinal study, conducted at Department of Urology, Kot Khawaja Saeed hospital, Lahore and Department of Urology, DHQ hospital Sheikhupura. Total 30 Patients of Peyronie's disease in Urology OPD were enrolled. Patients were randomized into two groups by online random number generator.

Results: In Group-A, after therapy, mean plaque length was decreased from 9.9 ± 2.4 to 8.8 ± 2.1 mm and mean plaque width was decreased from 4.2 ± 0.9 mm to 3.8 ± 0.4 mm, mean penile curvature was decreased from $34.1^\circ \pm 8.4^\circ$ to $26.2^\circ \pm 7.2^\circ$, mean IIEF score was improved from 35.1 ± 11.4 to 46.2 ± 10.6 , and mean pain score was decreased from 4.2 ± 1.1 to 3.4 ± 0.7 . In Group-B, after therapy, mean plaque length was decreased from 10.7 ± 2.6 to 7.3 ± 1.8 mm and mean plaque width was decreased from 4.3 ± 0.7 mm to 3.0 ± 0.3 mm, mean penile curvature was decreased from $35.4^\circ \pm 7.9^\circ$ to $20.1^\circ \pm 6.3^\circ$, mean IIEF score was improved from 36.3 ± 12.4 to 59.8 ± 12.6 , and mean pain score was decreased from 4.1 ± 1.0 to 1.9 ± 0.6 .

Conclusion: Intralesional inj. Interferon alpha-2b (3MU) is more effective than Intralesional inj. Interferon alpha-2b (2MU) for reducing plaque size, pain, and penile deviation, and for improvement in erectile dysfunction in patients with Peyronie's disease.

Keywords: Peyronie's disease, Interferon alpha 2b, Fibrous plaque

INTRODUCTION

Francois Gigot de la Peyronie first documented Peyronie's disease (PD) in 1743, and it affects 3-8% males and is most commonly observed in age 40-70 years [1]. Penile curvature, pain on erection, complications during sexual intercourse, palpable nodule are common clinical signs and symptoms of Peyronie's disease. Patients of Peyronie's disease have Erectile dysfunction (ED) in 40 % which affects quality of life, and significant psychological effects in 77 % of patients [1,2].

The treatment of PD is generally conservative with watch and wait policy during the first 3-6 months because 13-40% of patients have resolution/reduction of plaque during this period with improvement in symptoms [1]. The methods used for reduction of plaque are oral therapy, penile traction, transdermal electromotive administration (TEA) and intralesional injections [1,2]. Several drugs had been used for PD for oral therapy including colchicine, tamoxifen, potassium aminobenzoate and vitamin E. Collagenase, steroids, interferon alpha 2B, and calcium channel blocker (verapamil) have been used as intralesional injections for Peyronie's disease [3].

Previous authors have reported different results with different doses of intralesional inj. Interferon alpha 2b regarding pain improvement, improvement in curvature, IIEF score improvement and decrease in plaque size. They have not compared all parameters or they have only reported results of different doses of inj. intrerferon alpha 2b individually. Therefore, this study was designed for finding the optimum dose of intralesional inj. Interferon alpha 2b for treatment of PD [4,5].

Aims and Objectives: The basic aim of the study was:

- To compare the efficacy of intralesional inj. interferon alpha 2b (2 MU) against intralesional inj. interferon alpha 2b (3 MU) in treatment of peyronie's disease.

MATERIAL AND METHODS

It was randomized clinical trial conducted at Department of Urology, Kot Khawaja Saeed hospital, Lahore and Department of

Urology, DHQ hospital Sheikhupura during 01 year (16-03-2018 to 15-03-2019). The data was collected through non-probability and convenience sampling.

The present work was a clinical study to assess the efficacy of Intralesional Inj. Interferon alpha 2b (2 MU) against Intralesional Inj. Interferon alpha 2b (3 MU) on plaque size, penile deviation, erectile function and pain in patients with Peyronie's disease. Patients with a diagnosis of PD were included in the study. A total of 30 patients underwent intralesional inj. Interferon alpha 2b treatment in the Department of Urology, Kot Khawaja Saeed hospital, Lahore and Department of Urology, DHQ hospital Sheikhupura.

Sample size: Total 30 patients of PD were taken as basis of 90 % confidence level, 5 % prevalence of PD and 10 % margin of error.

Study groups

- Group-A: 15 Patients were given Intralesional Inj. Interferon alpha 2b (2 MU).
- Group-B: 15 Patients were given Intralesional Inj. Interferon alpha 2b (3 MU).

Inclusion criteria

- Males of age 25 years or above having clinical evidence of Peyronie's disease (pain on erection deformity of penis, plaque or nonspecific genital pain).
- Discontinuation of any previous treatment for Peyronie's disease for at least 1 month.

Exclusion criteria

- History of treatment with Interferon alpha 2b for any disease within 1 month.
- Patients who have been operated for peyronie's disease

Procedure: Patients of Peyronie's disease presenting in Urology OPD fulfilling inclusion and exclusion criteria, were enrolled. Informed consent for inclusion in the study groups and sharing the data was obtained. Patients were randomized into two groups by online random number generator. Every patient was evaluated by physical examination of penis, Grey scale ultrasound, and following parameters/study variables: Plaque size (measured by

Grey scale ultrasound), Penile pain during erection (measured subjectively by Verbal descriptor scale), Penile deviation (measured after pharmacologically induced erection using goniometer), Erectile function (assessed through International Index of Erectile Function Questionnaire), were recorded on predesigned proforma.

- Group A patients were given Intralesional Inj. Interferon alpha 2b (2 MU) diluted in 5 ml normal saline twice a week for 6 weeks (total 12 injections during 6 weeks treatment period).
- Group B patients were given Intralesional Inj. Interferon alpha 2b (3 MU) diluted in 5 ml normal saline twice a week for 6 weeks (total 12 injections during 6 weeks treatment period).

For ultrasound, 7.5 MHz transducer was used and erection was pharmacologically induced by intracavernosal administration of inj. papaverine. During treatment, if any adverse reaction occurred (fever, skin reaction, priapism etc.) and intervention required for adverse reaction (if any) were recorded. After 2 weeks of last interferon alpha 2b injection, patients were again evaluated by the criteria defined above and results were recorded on proforma.

Statistical analysis: Data was entered and analyzed through SPSS version 22.0. All qualitative variables (trauma and complications) were presented in the form of frequency tables and percentages. All quantitative variables (age, plaque size, penile pain, etc) were presented in the form of mean±SD. Chi-square test was applied to compare the difference of variables in 2 groups. p-value <0.05 was taken as significant.

RESULTS

Mean age of all 30 patients was 54.38±18.52 years. Minimum and maximum age of patients was 35 and 63 years respectively. Mean duration of PD in all 30 patients was 3.9±2.2 months. Minimum and maximum duration of PD in patients was 1 and 9 months respectively.

Table-1: Outcome Measures Before And After Treatment

Variables	Before/After treatment	Group-A Mean(SD) n=15	Group-B Mean(SD) n=15	p-value
Plaque length(mm)	Before	9.9(2.4)	10.7(2.6)	0.040
	After	8.8(2.1)	7.3(1.8)	
Plaque width(mm)	Before	4.2(0.9)	4.3(0.7)	0.045
	After	3.8(0.4)	3.0(0.3)	
Penile deviation (dorsal/ventral in degrees)	Before	34.1°(8.4)	35.4°(7.9)	0.021
	After	26.2°(7.2)	20.1°(6.3)	
Penile pain (score)	Before	4.2(1.1)	4.1(1.0)	0.024
	After	3.4(0.7)	1.9(0.6)	
Erectile dysfunction (IIEF score)	Before	35.1(11.4)	36.3(12.4)	0.015
	After	46.2(10.6)	59.8(12.6)	

Outcome of treatment is described in above table along with p-value. P-value ≤0.05 is taken as significant.

Table-2: Complications After Treatment In Both Groups

		Group-A	Group-B	Total
Complications	Fever	2(13.3%)	2(13.3%)	4(13.3%)
	Malaise	5(33.3%)	5(33.3%)	10(33.3%)
Total		7(46.7%)	7(46.7%)	13(46.7%)

Patients were assessed for certain complications. In Group-A, 2(13.3%) patients suffered fever during treatment and 5(33.3%) patients suffered malaise. In Group-B, 2(13.3%) patients suffered fever during treatment and 5(33.3%) patients suffered malaise. Total 4(13.3%) patients suffered fever during treatment and 10(33.3%) patients suffered malaise during treatment and total complication rate was **46.7%**.

DISCUSSION

Francois Gigot de la Peyronie first described Peyronie's disease (PD) in 1743, and it affects 3-8% males and is most commonly observed in age 40-70 years [1]. Patients of Peyronie's disease

have Erectile dysfunction (ED) in 40 % which affects quality of life, and causes significant psychological effects in 77 % of patients [1]. Previous authors have reported different results with different doses of intralesional inj. Interferon alpha 2b regarding pain improvement, improvement in curvature, IIEF score improvement and decrease in plaque size [4,11,12].

The use of interferons for PD treatment was first described in a study (Duncan et al, 1991) in which cultured fibroblast, derived from PD plaques was treated with human recombinant interferon. Results showed that although the three forms of interferon a, b and c led to inhibition of fibroblast and collagen production, interferon C in addition caused an increase in GAG and fibronectin production. From these data the authors hypothesized that interferon a and b were reasonable agents for use as intralesional therapies for PD [4].

Jude and Wisnicwski, in 1997 designed the first placebo-controlled study involving interferon alpha-26 and described the effect of interferon 1.5mu. administered intralesional 3 times weekly over a 3 -week period in 13 patients, with PD of 12 months duration. It was found that 6 of 10 patients achieved complete resolution of erectile discomfort and significant improvement in penile deformity (mean improvement 20°), with those presenting with initial plaque length (<4cm) showing the significant improvements [6].

In 1999, Ahuja et al. diagnosed that the patients were treated with 1 million units of IFN-α-2b in 10 ml of normal saline, injected twice a week for 6 months and who initially reported penile pain on erection had resolution of their phallagia, were well (90%) nine of ten patients. They also demonstrated that 65% of their study patients had significant improvement in the curvature of their penis, ranging from 20 to 90% reduction in curvature, and that 85% had an objective decrease in plaque size [10,11]. The Success rate of my study is higher than Ahuja et al., as 92% of patients (3 MU group) had an objective decrease in plaque size and 70% of patients (2 MU group) had an objective decrease in plaque size [9].

In 2001, Brake et al. studied twenty-three men (mean age 53 years, range 27–69), who received interferon alpha 2b. While mean age of patients in my study is 54.38±18.52 years with age ranges from 35-63 years which is consistent with Brake et al. In Brake et al. study, the drug was injected subcutaneously adjacent to the plaque three times a week for 3 weeks at a dose of 2 million units. The results showed that all patients felt pain relief and 13 of 19 with pain before treatment became pain-free. The penile deviation was reduced in one patient; the deviation increased despite therapy in one patient and remained stable in the others. Impaired sexual function was improved in seven (30%) of the patients. Side-effects (myalgia, fever) occurred after only four of 207 injections (2%) [8,10,11,12].

CONCLUSION

According to the results of this study the Intralesional inj. Interferon alpha-2b (3MU) is more effective than Intralesional inj. Interferon alpha-2b (2MU) for reducing plaque size, pain, and penile deviation, and for improvement in erectile dysfunction in patients with Peyronie's disease.

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