ORIGINAL ARTICLE

Transcavernous Installation of Papaverine Hydrochloride in Impotence

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Abstract

Impotence is syndrome involving the interaction of psychogenic, hormonal, neurological, arterial, venous & sinusoidal factors. Management of impotence has evolved from a time-born pattern of sympathetic discussion and empiric use of medication to a scientifically planned diagnostic protocol and specific treatment regime. The present study was undertaken to assess the effects of pharmacologically induced penile erection in the treatment of organic and psychogenic impotence. The total number of cases studied was 20 who were given papaverine hydochloride 30mg, intracavernosally. The parameters like mean penile length, mean penile circumference, rigidity, duration of erection and overall success rate studied are found to be appreciable and satisfactory in the patients receiving papaverine. Side effects like painful erection, bradycardia is much less. Thus intracavernosal injection of papaverine is very effective and easy method of treating psychogenic and organic impotence.

Key Words

Papaverine hydrochloride, Transcavernous installation, Impotence

Introduction

Impotence is a common cause of stress and unhappiness in the male and their partners. Since the mid 1970's the traditional treatment for organic impotence has been the penile prosthesis with a high degree of acceptance. Penile revascularization procedures although technically difficult, offer another surgical option. The ability of PIPE to induce erection was first reported in 1982 following accidental intracavernosal injection of papaverine during a shunting procedure.(1) PIPE (pharmacologically induced penile erection) were assessed to differentiate between vascular and psychogenic impotence. Papaverine hydrochloride (6,7,demethoxy veratryl isoquinoline demetholoride) is an alkaloid present to the extent of about 1% in crude opium. Papaverine HCL is non specific smooth muscle relaxant and that produces vasodilatation.(2)

The present study has been undertaken to thoroughly evaluate the cases of impotence and to assess the effect of papaverine hydrochloride induced penile erection in the treatment of organic and psychogenic impotence.

Material and Methods

Twenty male patients of erectile impotence attending out patient department in Dayanand Medical College and Hospital were managed with intracavernosal instillation of papaverine. They ranged in the age group from 20 years to 60 years. Normal male subjects served as controls. However matching for the age was not done.

Criteria of selection of the patient

The patient who showed complete erectile impotence was selected for the study. Detailed clinical history of the patients was recorded and physical examination was done. Patients were subjected to investigations and psychological assessment.

Method of administration

Before starting the procedure the length & circumference of penis, blood pressure (brachial) and pulse were measured. A tourniquet (soft rubber catheter) was applied at the root of penis. Parameters measured during next 15 minutes were brachial B.P., radial pulse, length and circumference of penis and penile rigidity.

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Penile rigidity was monitored on Penrig Scale Data as reported by E.A. Kiley *et al*.(3) In control group 2.75 cc normal saline was injected 2 cm proximal to corona on the lateral aspect of corpus. Papaverine HCI 30 mg. was given by a single puncture, 2 cm proximal to corona on the lateral aspect of one of the corpus cavernosum. In all the cases, PIPE was given under complete aseptic precautions without local anesthesia and without sexual stimuli. Patients have been followed up for the duration of 3 months for the frequency of spontaneous erection, frequency of sexual intercourse within a week and frequency of erection after sexual stimulation. Clinical results were classified as good, fair, insufficient and unchanged.

Results

In the present study 80% cases had psychogenic and 20% cases had organic impotence (Table I). Psychological assessment was done on the basis of exclusion of organic lesions and associated stressful underlying events.

Control cases: The initial mean penile length in the control group was 7.25 cm. After injection of normal saline there

Table I: Incidence of Psycogenic and Organic Importence

S.No.	Cause	No. of Cases	Percentage
1	Psychogenic	16	80
2	Organic	4	20
	- Diabetic impotence	1	5
	- Neurogenic (Alcoholic)	2	10
	- Undiagnosed organic	1	5
	TOTAL	20	100

was no change in the penile length and it remained static at 7.25 cm. The initial penile circumference in the control group was 8.12 cm, there was little change at 5 min, 10 min (8.25 cm & 8.75cm) and 15 min (8.62cm) (table II).

Impotent cases: Mean penile circumference in case of psychogenic impotence was 11.26 cm as compared to

Table II: PARAMETERS OF CONTROL CASES

S.No.	Age in Years	Initial Penile Length	Initial Penile Circumference	After injection of Saline						Penile Rigidity
				Penile length			Penile cicumference			
		Cms	Cms	5 mts	10 mts	15 mts	5 mts	10 mts	15 mts	
1	23	7.5	8	7.5	7.5	7.5	8	9	9	Nil
2	37	7.8	8.5	7.0	7.0	7.0	9.0	9.0	8.5	Nil
3	42	6.5	7.5	6.5	6.5	6.5	7.5	8.0	8.0	Nil
4	53	8.0	8.5	8.0	8.0	8.0	8.5	9.0	9.0	Nil
Mean	38.75	7.25	8.12	7.25	7.25	7.25	8.25	8.75	8.62	Nil

8.98 cm initially. Mean penile rigidity on Penrig scale was increased to 75-100 (Table III). Mean duration of full erection was 132 min. In one case the erection lasted for 240 minutes (maximum) while in two cases it lasted for 30-35 minutes (minimum) (table IV).

In our study, 8 cases (40%) developed penile pain at injection site and one case (5%) experienced prolonged

Table III: Parameters in Impotent Cases

S.No.	Impotent Males	Mean Initial Penile Length	Mean Penile Length After PIPE	Mean Initial Penile Circum-ference	Mean Peak Circumfer-ence After PIPE Scale	Rigidity as per Penrig Scale
		Cms	Cms	Cms		
1	Psy-chogenic group	5.9	10.16	8.98	11.26	75-100
2	Organic group	60	9.8	10.00	10.9	75-100

Table IV: Duration of Full Erection in Different Cases After Pipe

Time of full erection (in minutes)	No of cases	Percentage
30-40	3	15
40-50	2	10
75	2	10
90	2	10
120	3	15
135	1	5
150	2	10
165	2	10
180	1	5
210	1	5
240	1	5

erection following injection which was managed by aspiration of corpora cavernosa.

Follow up: Four cases out of 20 did not turn up after 2 wks so could not be followed up. 20 cases were followed up at first week, 16 cases up to second and 10 cases up to third week. Only 6 cases were available after 5 weeks and only 4 cases were followed up to three months.

Success rate: The success rate in the first week was observed to be 70%, in the second week it was 70%, in the third week it was 30%, fourth week it was 30% and in three months follow up it was 20% as per the follow up attendance. Only four cases were available for such long follow up (Table V).

Table V: SUCCESS RATE

No. of cases	Weeks				Months 3
	I	II	III	IV	
20	14	12	6	6	4
Percentage	70	60	30	30	20

Achievement of detumescence: Detumescence was achieved spontaneously associated with coitus in 70% of cases. Spontaneous without coitus in 25% cases and a single case with priapism needed needle aspiration of blood from cavernosa (Table VI).

Table VI: Achievement of Detumsence

Cause of Detumescence	No of cases	Perce-ntage
1.Spontaneous, associated with coitus	14	70
2. Spontaneous without coitus	5	25
3. Spontaneous with intervention	1	5
TOTAL	20	100

Discussion

The literature on impotence has markedly increased in the past decade. The use of vasoactive intracavernosal pharmacotherapy for the treatment of impotence is rapidly expanding because of its effectiveness and rarity of short term complications. In our study 80% (16 cases) had psychogenic impotence. In this group when PIPE was achieved by 30mg papaverine, it was observed that mean penile length increased to 10.16 cm after the peak response obtained as compared to 5.9 cm initially with a mean latent period of 1.9 min.

Mean penile circumference in cases of psychogenic impotence was 11.26 cm as compared to 8.98 cm initially. Comparing the cases with the control group i.e. normal saline injection, we have achieved better result with papaverine and in the sub group psychogenic etiology had better result as compared to the organic group.

Pharmacologically induced penile erection with papaverine is very effective and easy method of treating psychogenic and organic impotence. As per the literature, failure rates in the organic group are high as compared to those obtained in the psychogenic group, but still the procedure is of paramount importance in the treatment of such patients as they would otherwise be considered for nothing less than a penile prosthesis which is costly and complicated procedure as has been seen in this study also.(4)

When we consider peak mean rigidity at 5, 10 and 15 min, a significant and satisfactory rigidity on Penrig scale (75-100) was obtained with PIPE with papaverine. The same types of observations were found in the organic group. The mean maximum penile length 9.8 cm was found against 6.4 cm initially, while maximum penile circumference 10.9 cm was observed against initial 8.1 cm, showing the significant rise.

When we consider the mean duration of erection, it was found to be 132 min (Table IV), as compared to 2 hrs + 48 min and 2 hrs + 15 min in the study of Virag *et al* (1) which matches with the present study. The success rate achieved at first week was 70% in comparison to 95% with 30mg papaverine reported by Zorgniotti *et al* (5) 60% with 60 mg papaverine reported by Abber6. In the recent studies also papaverine and phentolamine combination has been shown to achieve the longer duration of action.(7) Detumescence was achieved spontaneously in 95% cases (Table VI). In the study of Sidi and associates detumescence was achieved in 81% cases.(8) On following up these cases it was observed that fewer patients reported for follow up over next 3 months. Majority of cases did not turn up for follow up as simple because they responded well and started having spontaneous erection and did not feel the necessity to undergo PIPE again.

Conclusion

Although we could achieve positive results with intracavernosal papaverine injection, but as the recent trials with different cocktail regimens are coming up, a larger study with more number of cases is required to establish the efficacy of low dose papaverine as monotherapy. To minimize the complications, careful selection of cases, caution, dosages determination and thorough instructions on injection technique are mandated.

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