

Dr. R.G. RAUT

Medical Officer, PHC Dimbhe, Pune District

Dr. HANAMANTRAO CHAVAN

District Health Officer, Pune District

Dr. P.S. PAWAR

Medical Superintendent,
Sassoon General Hospital, Pune

Dr. S.P. GAIKWAD

Head of the Department of Ayurvedic,
Sassoon General Hospital, Pune

Use of "PINAK" in the Treatment of Scorpion Stings

Pinak is a an ayurvedic antivenin used for snake bite cases. Feedback from patients of scorpion stings stimulated us for this study. Now we have concluded that a single tablet of Pinak is able to cure scorpion stings cases completely. More tablets may be required in few selected cases of scorpion stings.

Scorpion stings are a major public health problem in many under developed tropical countries. Every year more that 1,25,000 case of scorpion stings are reported in India and a few unlucky ones loose their life due to it. Most of these cases occurs in the rural areas.

Out of 1500 scorpion species,

50 are dangerous to humans. The lethal scorpion found in the Asia continent belong to Megobuthus.

The scorpion's venom is composed of varying concentrations of neurotoxin, cardiotoxin, nephrotoxin, hemolytic toxin, hyaluronidases, phosphodiesterases, phospho-

lipases, histamine, serotonin, tryptophan and cytokine releasers. Scorpion stings cause a wide range of conditions, from severe local skin reactions to neurologic, respiratory and cardiovascular collapse. Most deaths occur during the first 24 hours after the scorpion sting and are due to respiratory or

cardiovascular failure. Further more, patients in rural areas tend to fare worse than patients in urban areas because of the delay in getting medical help due to a longer travel time to medical centres.

Treatment generally consists of moving the patient away from the scorpion and stabilizing the patients' airway and vital signs, followed by administration of antivenin and institution of symptomatic and local treatment.

It may be noted that scorpion toxins do not induce antibodies that cross-react against toxins of other scorpion species. Thus, no universal antivenin is available. Instead, 22 different types of scorpion antivenins exist. It does not prevent or protect the victim from development of severe cardiovascular manifestations. Moreover, it is not free from cardiovascular manifestations; also it is not free from anaphylaxis. It takes 45 minutes to reach peak tissue concentrations. In animals no beneficial effects of antivenin are observed if, it is injected more than 15 minutes after envenomation.

A majority of the victims go to 'vaidu' for treatment. Very few patients of scorpion stings come to State hospitals, because of lack of availability of treatment for scorpion bite in the State hospitals. Antivenom although available in the market, is very costly. It is beyond the reach of the rural folk. The treatment given by the doctors in the hospitals consists of a local xylocaine injection.

Pinak tablet has been in use in the area i.e. Satara, Solapur, Pune districts in India for quite some time. People store these tablets in their household and

administer themselves as and when required i.e. any bite. There have been encouraging reports from these people regarding Pinak use for scorpion stings. And, there have been no untoward incidents so far. If the Pinak tablet is made available to all in the area and then across the country, a large menace troubling the people can be effectively tackled there by reducing the morbidity and preventing mortality.

Oral toxicity of Pinak tablets were studied by the Indian Institute of Toxicology, Pune (a NABL accredited laboratory) which concluded that LD50 in rats was found to be greater than 2000mg/kg body weight.

The Pinak tablet is purely of herbal origin. It is polyvalent. The Contents are :

- (i) Erythrina Indica
- (ii) Mangifera Indica
- (iii) Eugenia Jambolana
- (iv) Jasminum Sombac

The heavy metal content of the Pinak preparation is well below the permissible levels i.e. 0 - 6 ppm.

Hence, the present study was taken up to study the effect of the Pinak used in scorpion sting cases.

Case Definition :

Any person irrespective of age, coming with a history of scorpion sting or symptoms suggestive of scorpion stings were considered for study.

Material and Methods :

The study was conducted from 01.02.2008 to 25.03.2009 in a little over one year. Cases were more during May, June, July and August months. However, a clear cut seasonal association was not observed. Also there was no diurnal variation observed.

All the patients were treated in Dimbhe PHC of Pune District. 25 Patients were referred by MPW/ANM while rest of the patients i.e. 35 patients came to PHC on their own and were seen

All the patients were given single Pinak tablet sublingually and observed for a minimum of 30 minutes.



by the Medical Officer In charge of PHC. A detailed history was taken so as to confirm the scorpion stings and type of scorpion species involved. All the patients were given single Pinak tablet sublingually and observed for a minimum of 30 minutes. After stabilization of their clinical condition and relief of pain, the patients were allowed to go home. A home visit was paid to these patients, the next day by the ANM/MPW of the PHC area to enquire about the condition of the patient.

After giving Pinak tablets sublingually, they were assessed for relief of pain and the effects on their CNS status by a visual analogue scale.

Results of the study :

A total of 30 patients of scorpion sting were included in the present study. Table I shows the age wise distribution of these patients.

Table I. Age wise distribution of scorpion sting cases

Age (in years)	Male	Female	Total
Less than 5	0 (0.0)	0 (0.0)	0 (0.0)
5 - 9	0 (0.0)	1 (3.3)	1 (3.3)
10 - 19	3(10.0)	2 (6.7)	5(16.7)
20 - 29	5(16.7)	3(10.0)	8(26.7)
30 - 39	4(13.3)	3(10.0)	7(23.3)
40 - 49	3(10.0)	1(3.3)	4(13.3)
50-59	2(6.7)	0(0.0)	2(6.7)
60 ~	0(0.0)	3(10.0)	3(10.0)
All	17(56.7)	13(43.3)	30(100.0)

Note : Figures in bracket indicate percentages

From Table I, it is seen that there were no cases in under five age group. Except that, there were patients from all other age groups. A large proportion of patients were in 20 - 29 years (26.7%) and 30-39 years (23.3%). There were fewer cases from extreme age groups. The 20 - 40 years is an active age group involved in field work and is naturally exposed to scorpion stings more.

Table II. Site of scorpion bite

Body part involved	Number	Percentage
1. Lower Limbs	16	53.34
2. Upper limbs	13	43.33
3. Abdomen	0	0.0
4. Head and Neck	0	0.0
5. Back	1	3.33
All	30	100.00



Lower limbs were the most commonly involved (53.34%) followed by upper limbs (43.33%). Since these are the peripheral parts involved in field work, they were exposed to scorpion sting.

Table III. Swelling at the site of scorpion bite:

Swelling	Number	Percentage
Present	16	53.33
Absent	14	46.67
Total	30	100.00

A little over half of the patients (53.33%) had swelling at the site of bite.

Most of the patients i.e. 25 (83.33%) had a burning sensation at the site of bite, while 2 (6.67%) had tingling sensation. Also, in 26 (86.67%) redness was observed around the site of sting. One patient had oedema around the site of sting.

On examination, it was observed that all the patients were conscious, afebrile and had no syncope. Only one patient (3.33%) had palpitation out of the 30 patients. 20 (66.67%) out of the 30, complained of sweating.

Table IV. Pulse rate of patients

Pulse rate per minute	Number	Percentage
up to 69	0	0.0
70 - 79	3	10.00
80 - 89	15	50.00
90 - 99	8	26.67
100 - 110	4	13.33
All	30	100.00

In 4 patients (13.33%) tachycardia was observed while in 8 patients (26.67%), an increased pulse rate of 90 - 99 per minute was observed. Usually in scorpion stings, an increased pulse rate is observed.

Table V: Diastolic blood pressure of patients:

Blood pressure (in mm Hg)	Number	Percentage
Up to 60	0	0.0
60 - 69	5	16.67
70 - 79	15	50.00
80 - 89	10	33.33
90 - 99	0	0.0
100 ~	0	0.0
All	30	100.00

Table VI: Respiratory Rate of patients :

Respiratory rate per minute	Number	Percentage
14 - 15	9	30.00
16 - 17	18	60.00
18 - 19	3	10.00
All	30	100.00

In 9 (30%) patients the respiratory rate was 14 or 15 per minute.

Table VII: Time gap from scorpion bite to administration of Pinak tablets

Time Gap	Number	Percentage
Up to 30 min	9	30.00
31 - 60 min	10	33.33
61 - 90 min	3	10.00
91 - 120 min	3	10.00
151 - 180 min	1	3.33
181 min ~	1	3.33
All	30	3.33

Table VIII: Blood pressure (Hypertension) in patients :

Systolic BP (in mm Hg)	Number	Percentage
Less than 90	0	00.00
91 - 120	23	76.67
121 ~ - 140	7	23.33
141~	0	00.00
All	30	100.00

None of the patients had hypotension or hypertension. Majority i.e. (76.67%) had a systolic blood pressure between 91 to 120 mm Hg.

Table IX : Evaluation of CNS effects

CNS effects	Scale in %				
	upto20%	21-40	41-60	61-80	81-100
1. Depressed to Euphoric	0 (0.0)	4 (13.3)	14 (46.67)	11 (36.67)	1 (3.33)
2. Passive to Active	0 (0.0)	0 (0.0)	7 (23.33)	13 (43.33)	10 (33.33)
3. Tired to alert	0 (0.0)	4 (13.3)	9 (30.00)	11 (36.67)	6 (20.00)
4. Relaxed to tense	6 (20.00)	7 (23.33)	5 (16.67)	11 (36.67)	1 (3.33)
5. Anxious to confident	0 (0.0)	3 (10.00)	6 (20.00)	11 (36.67)	10 (33.33)

Note : Figures in parentheses indicate percentages.

When the effects of Pinak on CNS were evaluated, it was observed that, 4 (13.3%) were depressed as apposed to 12 (40%) patients with euphoric state. While in the remaining 14 (46.67%), it was neither depressed nor euphoric.

Majority of the patients i.e. 23 (77%) were active with none in passive state.

Majority i.e., 17 (56.67%) were alert. However 4 patients (13.3%) felt tiredness.

Almost equal number of patients were found to be relaxed 13(43.33%) as compared to tense patients 12 (40%).

While 3 patients (10%) were found to be anxious, 21 (70%) felt that they were confident.

The patients were evaluated on a visual analogue scale of 1 to 10 for assessment of pain before and after administration of Pinak tablets.

Table X : Mean visual analogue score of pain:

Before Pinak	After Pinak	Mean Reduction in Score
7.47	1.9	5.57
Paired t - test = 19.17	P < 0.001	Highly Significant

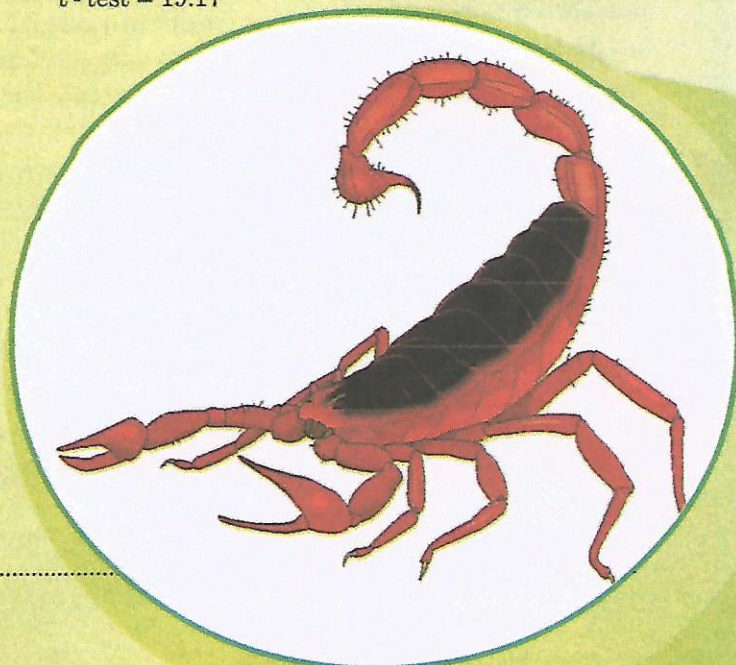


Table XI : Change in visual analogue score level of pain after Pinak

Pinak administration	Visual Analogue Score Level		
	0-3	4to6	7&above
Before Pinak	Nil	6(20.0)	24(80.0)
After Pinak administration	27(90.0)	2(6.67)	1(3.33)

Z test for score 7+ = 9.58 P < 0.001 Highly significant

Majority of the patients came with severe pain i.e., 24 (80%) had pain score of more than 7 while 20 (20%) were in 4 - 6 pain score. After Pinak administration an overwhelming proportion i.e., 27 (90%) were in 0 - 3 scale while only one individual had a pain score of more than 7 and above. In the absence of any active international treatment, the pain due to scorpion sting takes many hours to come down. It may be noted that the assessment in reduction of pain was done after 30 minutes. Hence, this reduction in pain can be attributed to the effect of Pinak administration (Table XI).

From Table X, we can compare the mean visual analogue score of pain assessment before and after Pinak Administration. The main pain score which was 7.47 before Pinak reduced to just 1.9 after Pinak administration, which was highly significant statistically also.

Clinically, we noted swelling and



redness followed the same fate as pain.

Summary and Conclusion:

A total of 30 cases of scorpion stings were considered in the present study. They were all administered Pinak tablets orally. Only one patient needed lignocaine injection locally. No serious untoward reactions were noted to Pinak administration. None of the patients experienced the serious effects of scorpion envenomation. The severity of pain came down rapidly after Pinak administration. In fact in 5 patients there was no pain at all after Pinak intake. It is worthwhile noting that 80% of the patients had a severe pain i.e. a pain visual analogue score of 7 and above before Pinak administration; and which came down to just 3.3% after Pinak intake. 90% of the patients had little or no pain at all. Thus the present study demonstrates the effectiveness of Pinak in scorpion stings cases.

The high cost of the present antivenom, non-availability of antivenom in most of the rural areas, the non-specific antivenom that is available today; all these factors compared with the easy availability, storage and administration of Pinak, relatively it's low cost and high effectiveness of Pinak make it a good alternative choice for consideration in the treatment of scorpion stings cases.

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