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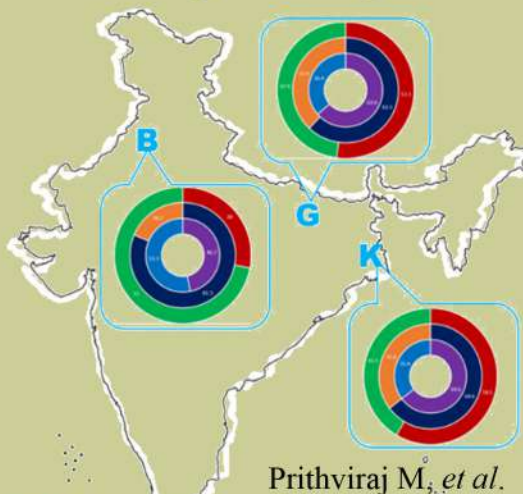
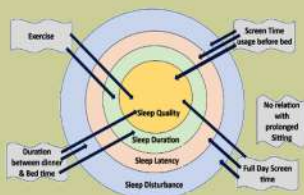
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Clinical profile and outcomes of Tarantula bite: A retrospective observational study from Eastern India

Subhendu Bag^{1*}, Durga Pada Dolai¹, Nilotpal Banerjee², Dayal Bandhu Majumdar³

ABSTRACT

Introduction: Tarantula bites are rare and often misunderstood in medical practice. In rural India, these bites cause anxiety and burden healthcare providers, often mistaken for snake bites or other arthropod envenomations, leading to unnecessary emergency treatments. This study aims to outline the clinical signs, management, and outcomes of tarantula bites in primary and secondary rural care settings. **Materials and Methods:** This retrospective study, conducted by the Department of Physiology at Midnapore Medical College and Debra Rural Hospital in West Bengal, spanned 12 months. It included 50 subjects with suspected tarantula bites. Patients presenting to the Emergency Department or outpatient services were screened, managed conservatively, and had favourable outcomes. **Results:** The most common symptom among tarantula bite patients (n = 50) was pain at the bite site, observed in 48 patients (96.0%), followed by local swelling in 44 patients (88.0%) and redness/erythema in 39 patients (78.0%). Other local symptoms included itching in 26 patients (52.0%), burning sensation in 22 patients (44.0%), and cellulitis in 18 patients (36.0%). Systemic manifestations were less frequent: fever in 11 patients (22.0%), systemic symptoms in 9 (18.0%), and nausea/vomiting in 6 (12.0%). Also, statistically significant associations between the monsoon season and cellulitis have been observed. **Conclusion:** Tarantula bites mainly result in localized inflammatory responses, with very good outcomes with appropriate early conservative management. Increased awareness among primary care physicians can help avoid misdiagnosis, unnecessary use of antivenom, and reduce patient anxiety.

Keywords: Tarantula bite, Spider bite, Cellulitis, Envenomation, Primary care, Emergency Care, Rural health.

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INTRODUCTION

Spider bites are an infrequent cause of presentation to healthcare facilities; however, when they occur, they often generate disproportionate fear and uncertainty among patients and healthcare providers.¹ In India, data on the incidence of Tarantula bites are lacking due to the absence of systematic reporting. Tarantulas, belonging to the family Theraphosidae, are large hairy spiders commonly encountered in rural and forested regions of India.² Although their venom is generally considered nonlethal to humans, encounters with tarantulas may result in painful local reactions and, occasionally, secondary complications.

In primary care and rural healthcare settings, tarantula bites are frequently misinterpreted as snake bites or envenomations by other venomous arthropods.³ This diagnostic confusion may lead to unnecessary referrals, inappropriate antivenom use, increased healthcare costs, and heightened patient anxiety. The lack of familiarity with the clinical spectrum of tarantula bites further compounds this problem, particularly in regions where such encounters are seasonal or sporadic.

The published literature on tarantula bites is limited, with most available data consisting of isolated case reports or small case series from non-Indian settings.⁴ Despite anecdotal reports of increasing human-spider interactions in certain rural areas, data on the seasonal variation in the clinical presentation and outcomes of tarantula bites remain scarce in India. Ecological studies in parts of West Bengal have suggested that the seasonal behavioral patterns of *Chilobrachys* species, particularly during mating periods,

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may increase the likelihood of accidental human contact. However, there is limited clinical correlation between these ecological observations and patient-level outcomes in routine and Emergency health care practice in rural areas. Understanding the true clinical profile and natural course of tarantula bites is essential for primary care physicians, emergency physicians, and rural practitioners, who are often the first point of contact for such patients.⁵ Accurate recognition can facilitate appropriate management, avoid unnecessary interventions, and reassure patients regarding their prognosis.

The current study was undertaken to describe the demographic characteristics, clinical manifestations, management strategies, and outcomes of patients presenting

with tarantula bites at a secondary care hospital that predominantly serves rural populations in Eastern India. By providing systematic clinical data from healthcare facilities, the study aims to collect evidence to support rational, cost-effective, and patient-centered care.

MATERIALS AND METHODS

This retrospective observational study was conducted over 12 months in the Department of Physiology at Midnapore Medical College, Midnapore, West Bengal, in collaboration with Debra Rural Hospital, Paschim Medinipur. A total of 50 patients with a history suggestive of a tarantula bite were included in the final analysis. The study population comprised individuals presenting to the emergency department or outpatient services during the study period, who were screened based on clinical history consistent with tarantula envenomation.

The case definition in this study followed the criteria outlined in the Medical Officers' Training Module on Management of Snake Bite, Animal Bite and Common Poisonous Bites (2022), published by the Public Health and Communicable Diseases Branch, Department of Health and Family Welfare, Government of West Bengal. A case of tarantula bite was defined as any patient presenting with either a history of spider bite or direct contact with a large spider identified by the patient or bystanders as a tarantula, or the presence of local signs consistent with arachnid bite, such as pain, swelling, erythema, punctate lesions, or cellulitis, with or without visual confirmation of the offending spider. Study variables included demographic and bite-related characteristics of the participants, clinical manifestations among tarantula bite patients, the association between season and cellulitis, and the association between occupation and season of tarantula bite. Inclusion criteria comprised patients of any age and sex with a history suggestive of a tarantula bite and complete medical records, including clinical features, treatment, and



Figure 2: Tarantula in its natural environment. Inset - Sample of *Chilobrachys* Tarantula collected from Debra, West Bengal (Photo courtesy – one of the victims included in the study). Image created/modified with Google Gemini.

outcome. Exclusion criteria included confirmed snakebite or other clearly identifiable bites from venomous animals, incomplete or missing clinical records, and patients referred after receiving definitive treatment elsewhere.

Treatment and Outcome

Most patients were managed conservatively with symptomatic treatment, including analgesics, antihistamines, wound care, and observation. Patients presenting with significant local inflammation or cellulitis received appropriate antibiotic therapy. No patient required intensive care admission or surgical intervention. The majority of patients showed complete clinical recovery without long-term complications. Most cases improved within a few days of treatment, while patients with cellulitis required a relatively longer duration of therapy and follow-up. Overall, the outcome was favorable, with full recovery observed in most patients and no mortality reported, indicating that tarantula bites are generally associated with a good prognosis when recognized early and managed appropriately.

Statistical analysis

All collected data were tabulated and processed to obtain descriptive statistics for demographic variables, clinical features, and seasonal (monsoon-related) variations. Categorical variables were expressed as frequencies and percentages. Graphical representations were prepared to



Figure 1: Clinical photographs showing the dorsum of a study subject with evidence of (A) healed and healing cutaneous lesions. Multiple areas of scarring and residual erythematous patches are visible, along with small punctate defects suggestive of prior ulceration or trauma. The distribution of lesions indicates localized tissue damage and reparative changes, consistent with post-inflammatory healing processes. (B) The other view of the same site demonstrates diffuse swelling, skin discoloration, and areas of peeling with scarring. Multiple small ulcerative lesions are visible centrally, consistent with localized inflammatory or infectious pathology. The overall appearance suggests ongoing cutaneous damage with reparative changes.

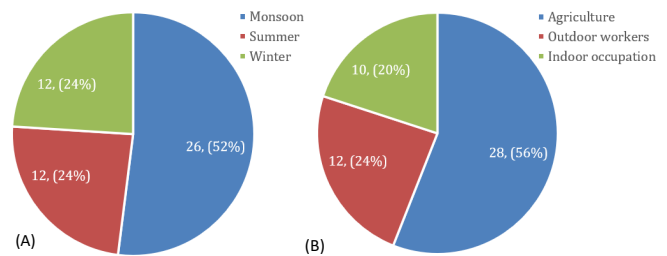


Figure 3: Seasonal (A) and occupational (B) variations in tarantula-bite patients

Table 1: Demographic and bite-related characteristics of study participants (n = 50)

Variable	Category	Numbers	Variable	Category	Numbers
Age group (years)	≤20	08	Residence	Rural	38
	21–40	22		Urban	12
	41–60	14	Bite site	Upper limb	18
	>60	06		Lower limb	27
Gender	Male	33	Type of exposure	Other sites	05
	Female	17		Outdoor exposure	41
				Indoor exposure	09

illustrate distributions and seasonal trends. Associations between groups were explored using cross-tabulations and comparative plots. All statistical processing, graphical representation, and group-wise comparisons were carried out using Microsoft Excel (Microsoft Corporation, Redmond, WA, USA). For statistical significance, a probability of less than 0.05 was considered.

RESULTS

The demographic features and bite-related data of the study participants (n=50) showed (Table 1) that the majority of subjects were in the age group 21 to 40 years (44%), followed by 41 to 60 years (28%), ≤20 years (16%), and >60 years (12%). Regarding sex, 66% of subjects were male, and 34% were female. Most subjects were from rural areas (76%), while 24.0 were from urban areas. Regarding bite sites, the lower limb was the most commonly affected (54%), followed by the upper limb (36%) and other sites (10%). By exposure type, the majority of bites occurred outdoors (82%), whereas 18% of subjects reported indoor exposure.

Among tarantula bite subjects (n = 50), pain at the bite site was the most common symptom, observed in 96% subjects, followed by local swelling in 88% subjects, and redness/erythema in 78% subjects (Table 2). Other local symptoms included itching in 52% of subjects, a burning sensation in

Table 2: Clinical manifestations among tarantula-bite patients.

Clinical Manifestation	Numbers	Clinical Manifestation	Numbers
Pain at the bite site	48	Burning sensation	22
		Fever	11
Local swelling	44	Cellulitis	18
Redness/erythema	39	Nausea/vomiting	06
Itching	26	Systemic symptoms	09

Table 3: Cellulitis status among tarantula-bite patients.

Season	Cellulitis status	
	Present	Absent
Monsoon	14	12
Summer	3	9
Winter	1	11
Total	18	32

Table 4: Seasonal variations in tarantula-bite cases

Occupation	Monsoon	Summer	Winter
Agriculture	18	06	04
Outdoor workers	06	04	02
Indoor occupation	02	02	06
Total	26	12	12

44%, and cellulitis in 36%. Systemic manifestations were less frequent, with fever reported in 22%, systemic symptoms in 18%, and nausea/vomiting in 12% of subjects (Table 2).

The association between season and cellulitis among tarantula bite patients (n=50) showed (Table 3) that cellulitis was more frequent during the monsoon season, with 28% developing cellulitis compared to 24% without cellulitis. During summer, cellulitis was present in 6% of patients and absent in 18%, while in winter, only 2% had cellulitis and 22% did not. A statistically significant correlation ($p = 0.018$) between seasonal variation and the occurrence of cellulitis was observed.

Data are presented as the number of patients

The distribution of occupation type and season of tarantula bite occurrence among study participants showed that patients engaged in agricultural occupations had the highest number of bites during the monsoon season (36.0%), followed by summer (12.0%) and winter (8.0%). Among outdoor workers, tarantula bites were observed in 12% of patients during the monsoon, 8% during the summer, and 4% during the winter. Patients with indoor occupations had fewer cases during the monsoon (4.0%) and summer (4.0%), whereas a higher proportion was observed during winter (12.0%). A statistically significant association ($p = 0.021$) between occupation and season of tarantula bite was observed (Table 4).

Data are presented as the number of patients

In the present study, the seasonal distribution of tarantula bite cases revealed that the majority occurred during the monsoon, followed by equal proportions in summer and winter (Figure 3A). Occupational analysis showed that agricultural workers were most frequently affected, while outdoor workers accounted for 24% of cases and indoor workers for 20% (Figure 3B). These findings highlight a clear

predominance of tarantula bites during the monsoon season and among individuals engaged in agricultural activities. 3. Seasonal (A) and occupational (B) variations in tarantula-bite patients.

DISCUSSION

This retrospective observational study analyzed the salient clinical signs and symptoms, along with outcomes, in 50 patients with a history suggestive of a tarantula bite. In the current study, the largest group of subjects was young adults, with the highest proportion in the 21 to 40-year age group (44%), followed by the 41 to 60-year age group (28%). Similar observations were reported by Fusto *et al.*⁶ In their observation, spider bite-related presentations were more common among young and middle-aged individuals due to increased outdoor activity and occupational exposure.

One important observation was male predominance in the present study, with 66% of patients being male. This finding is consistent with the observations of Diaz,⁷ who reported a higher frequency of spider bite cases among males, attributing this to greater involvement in outdoor and occupational activities. The predominance of patients from rural areas (76%) in our study may be explained by increased exposure to natural habitats, agricultural fields, and rural environments where tarantulas are commonly encountered. A similar rural predominance was reported by Martins⁸, who noted that envenomation and arthropod bite cases are more frequently encountered in rural populations with close contact with wildlife.

Regarding bite characteristics, the most common site affected was the lower limb (54%), followed by the upper limb (36%). Similar patterns were described by Dippenaar-Schoeman A⁹, who reported that the extremities are the most frequent sites of involvement in spider bites, resulting from accidental contact while walking, farming, or handling vegetation. In the current study, outdoor exposure was observed in 82% of patients, supporting the role of environmental exposure in tarantula bites. Tibério CT *et al.* also emphasized that tarantula bites are primarily associated with accidental encounters during outdoor activities and occupational exposure.¹⁰

The clinical presentation in the present study was predominantly local, with pain at the bite site (96%), local swelling (88%), and erythema (78%) being the most common manifestations. These findings are comparable to those of the study by Erickson,¹¹ which reported pain, erythema, and swelling as the major clinical features following spider envenomation. Cellulitis was observed in 36% of patients in our study, suggesting secondary inflammatory or infectious complications following bite injury. Similar local complications have been described by Tormos,¹² who noted that soft-tissue inflammation and secondary infection may occur after spider bites.

In the present study, cellulitis showed a significant association with season, with the highest occurrence during the monsoon season (28%). This seasonal pattern may be due to increased

spider activity, higher environmental humidity, and greater human exposure during rainy months. Similar seasonal variation in arthropod bite presentations was described by Vrenosi,¹³ who reported an increased incidence of venomous bites during warm and humid seasons.

A statistically significant association between occupation and season was also noted ($p = 0.021$). Agricultural workers experienced the highest number of tarantula bites during the monsoon season (36%), followed by outdoor workers. This observation highlights occupational exposure as an important risk factor. The findings observed are very similar to those reported by Donham *et al.*¹⁴, who described agricultural and outdoor workers as high-risk groups due to frequent contact with spider habitats.

CONCLUSION

The present study demonstrated that tarantula bites predominantly affected young and middle-aged adults, with a higher occurrence among males, rural residents, and individuals engaged in agricultural or outdoor occupations. The lower limb was the most commonly affected site, and outdoor exposure was identified as the major risk factor for bites. Clinically, most patients presented with local manifestations, particularly pain, swelling, and erythema, while systemic symptoms were relatively uncommon. A significant association was observed between the monsoon season and cellulitis, and between occupation and the seasonal distribution of bites, indicating that environmental and occupational factors play an important role in the epidemiology of tarantula bites. Early recognition of clinical features, prompt management of local complications, and increased awareness among high-risk populations may help reduce morbidity associated with tarantula bites. Further large-scale prospective studies are recommended to better understand the clinical spectrum and outcomes of tarantula envenomation in endemic regions.

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PEER-REVIEWED CERTIFICATION

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Gymguard-SCD Clinical Decision Support System

GYM GUARD-SCD: THE FUTURE OF SPORTS CARDIOLOGY AND PREVENTIVE CARDIOLOGY



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SYSTEM AND METHOD FOR PRE-EXERCISE DYNAMIC ELECTRO-AUTONOMIC INSTABILITY DETECTION

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