

**Primary Syphilis**



Single, painless, well defined ulcer with clean looking granulation tissue on floor.  
 Hard chancre - heals with scar even without treatment  
 Indurated  
 Hard chancre - heals with scar even without treatment

photosensitivity in Indian often occur in the form of lichenoid papules.<sup>8</sup>

**Study of Mangalore :**

Analysis of 3673 cases showed (2225 males and 1448 females) attended skin OPD showed (11.16%) patterns having skin diseases. 260 (63.41%) of them were males, 150 (36.59%) females of there 178 (43.40%) had infectious dermatoses and 243 (57.07%) had non infectious dermatoses. Fungal infections were seen in 22.5% of Pts. and eczema an upper hand in noninfectious group (32.19%). Psoriasis and other papulosquamous seen in (2.43%) pt., Pigmentary diseases in 2.92%, Acne and autoimmune disease (12.68%) and congenital and hereditary diseases in (4.3%) patients.

**CONCLUSION**

The magical year of 2000 AD has come to an end. Health for all by 2000 AD' remain as a distant mirage and the slogan has been rephrased as 'Health for all in 21st Century'.

To improve the prevailing situation, the problem of rural health is to be addressed both at the macro (national and state) and micro level (district and regional), in a holistic way, with genuine efforts to bring the poorest of the population to the centre of the fiscal policies. A paradigm shift

from the current 'biomedical modes' to a 'Socio Cultural modes' is required to meet the needs of the rural population. A comprehensive revised national health policy addressing the existing inequalities and work towards promoting a long term perspective plan exclusively for rural health is the current need.<sup>1</sup>

Improvement in the standard of living, education of the general public, improvement in environmental sanitation and good nutritious food may help us to bring down the skin diseases.<sup>3</sup>

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# CRAB -

## Cutaneous Reactions to Arthropod Bites

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### Introduction

The bites and stings of arthropods cause many patients to consult physicians for relief from symptoms. All arthropods are invertebrates with having chitinous exoskeleton, bilateral symmetry, true segmentation, and jointed true appendages that vary from few to many.<sup>9</sup> Arthropods produce their effects on skin by following mechanisms (more than one may be implicated simultaneously also):

- 1) Mechanical trauma- (feeding on blood): 'vessel feeders' insert the tip of their mouth parts into a capillary, e.g. mosquitoes and 'pool feeders' lacerate the skin, damage blood vessels, and feed on the extravasated blood e.g. ticks<sup>11</sup>
- 2) Injection of irritant, cytotoxic or pharmacologically active substances such as hyaluronidase<sup>13,21</sup> proteases, peptidases and phospholipases<sup>1</sup>; kinins; histamine liberating agents; histamine 5-hydroxytryptamine or acetylcholine<sup>17,27</sup>
- 3) Injection of potential allergens
- 4) Bacterial infection
- 5) Invasion of the host's tissues e.g. myiasis
- 6) Contact reactions –e.g. Secretions of blister beetles contain chemical canthridin<sup>1</sup>
- 7) Reactions to retained mouthparts e.g. ticks
- 8) Transmission of diseases e.g. malaria (mosquitoes), typhus (lice)<sup>1</sup>

Susceptibility to infestation or attack depends on various environmental and social factors. (As person living in tropical climates wear fewer

cloths therefore more expose to bites and stings). Certain occupations carry an increased risk of reactions to arthropods (e.g. Forestry workers, dock workers etc). There are some factors by which arthropods are attracted to its host species include body heat, carbon dioxide in exhaled air (e.g. ticks, fleas, bed bugs and human sweat contains mosquito attractants). Insect pheromones play a part in attacks by large numbers of Hymenoptera.<sup>1</sup>

### Classification-

There are five out of nine classes of arthropod causes local and systemic reactions associated with their bites.<sup>12</sup> Though the class Insecta is the largest group, but the class Arachnida, which includes ticks, spiders and mites, is probably of greater importance.<sup>2</sup>

- |              |  |
|--------------|--|
| 1. Class-I   | Crustacea (lobsters, crabs, shrimps)   |
| 2. Class-II  | Diplopoda (millipedes)   |
| 3. Class-III | Chilopoda (centipedes)   |
| 4. Class-IV  | Arachnida (scorpions, spiders, ticks, demodese, sarcotes, cheyletiella, miscellaneous mites)   |
| 5. Class-V   | Insecta (suckling lice [Anoplura], bugs [Hemiptera], flies, mosquitoes, sand flies [Diptera], fleas [Siphonaptera], beetles [Coleoptera], moths and butterflies [Lepidoptera], bees, wasps hornets [Hymenoptera].) |

(Brief discussion of each class and order of the various arthropods [figure-1])  
Order - Hymenoptera: Family Apidae (honey bees) ,Family Bombidae (bumble bees) ,Family

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Halictidae (sweat bees), Family Vespidae (wasps, hornets, yellow jackets) and Family Formicidae (ants). The bees, wasps, hornets, are having modified stinger apparatus produce immediate burning/ pain, followed by intense, local, erythematous reaction with swelling and urticaria. Severe systemic reactions occur in individuals who are sensitized with (0.4 – 0.8%), angioedema / generalized urticaria and / or respiratory insufficiency from laryngeal edema or bronchospasm and / or shock may be seen.<sup>20</sup> Fire and harvester ants produce local skin necrosis and a systemic reaction to sting bite, begins as an intense local inflammatory reaction that evolves to a sterile pustule. Order - Diptera: Family Culicidae (mosquitoes), Family Tabanidae (horse flies, deer flies), Family Muscidae (stable flies), Family Simuliidae (black flies or buffalo gnats), Family Heleidae ("punkies," "no-see-ums," "sand flies") In this order (one of the largest group of insects) many members having mouth parts capable of penetrating skin and produces abnormal local and severe systemic reactions. Mosquitoes are the most frequent offenders, producing severe local effects; but rarely do they cause systemic symptoms. The mosquito bite whealing is mediated by specific anti-saliva IgE antibodies.<sup>19</sup> The mosquito bite reactions were found to consist of both an immediate and a delayed reaction. The eruption and time course of the immediate and delayed reaction were consistent with type I hypersensitivity and cutaneous basophil hypersensitivity.<sup>22</sup> Positive rates of immediate reaction increased from early childhood to adolescence and decreased with age from adulthood.<sup>22</sup> Abnormal delayed reaction occurring within 4 to 24 hours may vary from pronounced edema and erythema to large papular or vesicular or even bulbous lesions. Cellulitis and lymphangitis or necrosis of arthus type is not uncommon.<sup>5</sup> Biting flies including the family Tabanidae (horse flies and deer flies) and the family Muscidae (stable flies) inflict painful local lesion. Black flies, sometimes called "buffalo gnats," also have vicious bites and are capable of producing itching, erythema and edema. Black fly fever characterized by fever, nausea, generalized lymphadenitis. Midges bites produce immediate

pain with erythema at bite site with 2 to 3 papulovesicles, followed by indurated nodules (up to 1 cm) persisting for many months. Botfly larvae penetrate skin or are deposited on open wounds producing cutaneous myiasis. House flies: larvae deposited into any exposed skin site (ear, nose, paranasal sinuses, mouth, eye, anus, and vagina) or at wound site (leg ulcers, ulcerated Squamous and basal cell carcinomas, hematomas, umbilical stump) and grow into maggots, which can be seen on surface of wound. Order - Siphonaptera (Fleas) Family Pulicidae, Cat flea (*Ctenocephalides felis*), Dog flea (*Ctenocephalides canis*) and Human flea (*Pulex irritans*), abnormal reaction to flea bites takes varying forms, including papules, urticaria, induration, necrosis, secondary infection, pustulation are common and produce typical discoloration seen on the lower extremities. Grouped lesions are characteristic of flea bites, which is an important finding in the specific diagnosis. Tunga penetrans: (Tungiasis) produces papule or vesicle, as eggs mature papule becomes a white, pea sized nodule. Due to intralesional hemorrhage, it becomes black. If lesions are squeezed, eggs, feces, and internal organs are extruded through pore. Common sites are feet, especially under toe nails, between toes, plantar aspect of the feet (sparing weight bearing areas) and in sunbathers, any exposed site. Order - Anoplura (Sucking Lice) -Family Haemntopinidae, Head and body louse (*Pediculus humanus*), Crab louse (*Phthirus pubis*) Order -Hemiptera (True Bugs) -Family Cimicidae (bed bugs), Family Reduviidae (assassin bugs), Kissing bug (*Reduvius personatus*), Wheel bug (*Arilus cristatus*) Various orders, including lice and true bugs, are sporadically reported to cause allergic reactions. Bedbugs are well known nocturnal hematophagous insects and they appear only sporadically in homes and hostels. Bedbug infestations are common in the developing world, occurring in settings of unsanitary living conditions and overcrowding.<sup>14</sup> When attacking humans in full numbers they often cause generalized urticaria. Procalin has been identified as the major salivary allergen of *Triatoma protracta*.<sup>15</sup> Class – Arachnida: Order Araneida (spiders, tarantulas), Order Scorpionida

(scorpions) and Order Acarina (mites, ticks). Spiders and scorpions produce envenomation as the cause for pronounced local and systemic symptoms. Some bury themselves in the skin during their adult life for purposes of feeding (ticks), while others invade the skin during their larval stages of development (mites). Poisonous spiders (black widow and brown recluse) and the scorpions produce primary reactions through the toxic action of the venom. Periodically patients report spider bites, usually about the head and face and usually acquired in unfinished attics or basements. Loxoscelism is a reaction to the bite of spiders causes two types of reactions. In the localized type, necrotic Loxoscelism, a cutaneous lesion with extensive gangrene and in systemic manifestations of viscerocutaneous Loxoscelism there is the same local reaction, but, in addition, fever, chills, vomiting, joint pain, and hematologic abnormalities can occur. Hemoglobinemia and hemoglobinuria suggest severe involvement. Deaths are believed to be caused by massive intravascular hemolysis.<sup>18,24</sup> Ticks belonging to the order Acarina and family Ixodidae, produce persistent local nodules are probably due to the residual portion of feeding apparatus at the site. These are readily relieved by simple excision. Ticks bites can produce local reactions, febrile illness, and paralysis. Hard Ixodes tick can produce erythema migrans at the site of bite.

#### **Clinical Presentation of Arthropods Bites** [figure 2]:

Many arthropods are known to attack human being for food, in defense or to carry on their life cycle. Bites, stings or actual invasion of the skin by arthropods will cause excessive reactions which may take the form of large lasting local effect or systemic symptoms.<sup>4</sup> Flying insects often affect exposed areas whereas those that crawl or hop will affect portions of the body accessible to them. The flea affects the lower extremities while the fly, mosquito and bee often attack the face and upper extremities. The spider may bite about the head of persons walking through unfinished basements, or around the exposed buttocks in open privies. Biting flies, mosquitoes and bees produce single lesions while the fleas bite several times to get full blood meals.<sup>4</sup>

The common skin symptoms are pruritus, intense local pain,<sup>12</sup> erythema, and oedema (up to 1 cm diameter). Allergic reactions to arthropods can be either local or generalized.<sup>5</sup> In local reactions oedema at the site of the sting comes in several hours and varies in size, but it can affect a hand or even an entire limb. In a dependent area this can lead to blistering and sometimes secondary infection. The oedema can be dangerous if it affects the airway. Generalized (or systemic) reactions vary in severity. Early features are erythema and pruritus, followed by urticaria or generalized angio-oedema. Patients with more severe generalized reactions often feel dyspnoic (either due to laryngeal oedema or asthma) hypotension lightheadedness, giddiness, fainting, or loss of consciousness, as if they are going to die ("a sense of impending doom"). Other less common features are abdominal pain, incontinence, central chest pain, or visual disturbances. The onset of generalized reactions is early, usually within 10 minutes of a sting.<sup>5</sup>

A severe allergic reaction subsequent to hymenoptera sting is a well-documented emergency. Optic neuritis, vasculitis, generalized polyneuropathy, myasthenia gravis and rhabdomyolysis are some of the unusual reactions following a sting.<sup>6</sup>

#### **Differential Diagnosis:**

Seasonal pruritus, folliculitis, furunculosis, pyoderma, demodicosis, scabies, fungal granuloma, hypersensitivity disorders, cutaneous drug reaction, systemic lupus erythematosus, mast cell tumor and lymphomatoid papulosis (LP).<sup>3,29</sup> As the bite site reactions having erythematous papules and blisters d/d can be an allergic contact dermatitis, mainly to plants (poison ivy or poison oak). If furuncular myiasis / tungiasis the d/d may be staphylococcus aureus paronychia, Candida paronychia, cercarial dermatitis, scabies, fire ant bite, folliculitis. If cutaneous necrosis is present the d/d are necrotizing soft tissue infection, vascular insufficiency, adverse cutaneous drug reaction.<sup>12</sup>

Laboratory Examinations: Histopathology of the lesions, bacterial culture for secondary infections and serology one can be done to rule out

systemic infection. Detection of bacteria in blood-sucking arthropods such as ticks, lice, mites, fleas, and mosquitoes has previously been achieved by nonspecific staining, immunodetection, and cell culture methodologies.<sup>10</sup> The histopathologically findings of bite site can be in two phases either in acute or in chronic. In acute phase there can be

biopsy. Accurate diagnosis is important for its proper management. Sometimes patients say the sting is from a bee when examine it is a wasp sting.<sup>3</sup> Insect bite hypersensitivities (IBH) are generally based on clinical signs and a cutaneous examination, with improvement noted after aggressive insect control and prevention of insect bites.<sup>2</sup>

**Classification of systemic allergic reactions to bee or wasp stings**

Severity grade	Symbol	Reactions
Mild	+	Erythema, pruritus, urticaria, angio-oedema, rhinitis, nausea
Moderate	++	Asthma, angio-oedema, abdominal pain
Severe	+++	Respiratory difficulty (laryngeal oedema or asthma), marked Hypotension, collapse, loss of consciousness

**Management:**

In the management of arthropod bite planning done according to the presentation as whether it is acute, chronic or local and generalized. Severity of reaction also put under consideration.

In local reactions acute management should be done with oral antihistamines but if severe local reaction glucocorticoids can be added, which may be required for several days.<sup>30</sup> Rest, elevation of extremity and the application of cold compresses will reduce the degree of swelling. Analgesics and antipruritics can give comfort and antibiotics control secondary infection.<sup>4</sup> For generalized allergic reactions the drugs used are same as in acute management according to the severity.<sup>5</sup> Other measures, including intravenous fluids, may also be required, but, provided that treatment is started soon after the onset of the reaction, Adrenaline (intramuscular/parental) is the key drug for severe reactions. For the systemic reaction the uses of the epinephrine aqueous 1:1000 given deep subcutaneously is still drug of choice. The exact dose is governed by circumstances 0.3 to 0.5 cc. for adults and 0.1 to 0.25 cc. for children 5 to 12 years of age.<sup>4</sup> In some cases short tapered course of oral glucocorticoids can be given for extensive CRAB.<sup>12</sup> General practitioners should be aware that there are two options for further management that is patients can either be desensitized or be given the appropriate drugs to treat a reaction themselves. Treatment with Rush-SIT (rush-specific immunotherapy)<sup>8</sup> is a reliable method for the treatment of anaphylactic reactions to hymenoptera venom even in less developed countries and venom immunotherapy.<sup>30, 31</sup> In Tungiasis first we should remove flea with needle, scalpel, or curette, attempting to remove all flea parts, then oral thiabendazole (25mg/kg per day

variable necrosis, spongiosis, and parakeratosis with plasma exudates, dermal infiltrate which is composed of eosinophils, neutrophils, lymphocytes, and histiocytes. Eosinophils are usually prominent; neutrophils may predominate in reactions to fleas, mosquitoes, fire ants, and brown recluse spiders.<sup>12</sup> Insect parts are rarely seen except in scabies and in tick bites where removal is incomplete. In chronic phase, lesions result from retained arthropod parts or hypersensitivity. Chronic lesion can be appears as a pseudolymphoma.<sup>12</sup> In one of the study it is found that in patients with a severe anaphylactic reaction without urticaria, but with flushing, tryptase should be assayed and an underlying mastocytosis should be considered.<sup>16</sup>

**Diagnosis:**

Most of the time diagnosis of insect bites is self-evident. If require confirmation done by lesional

Drugs used in acute management of reactions to stings <sup>5</sup>	
Type of reaction	Treatment
Local	Antihistamines (oral)
Mild	Antihistamines (oral or intramuscular)
Moderate	Antihistamines (intramuscular); hydrocortisone (intramuscular) Inhaled $\beta$ 2 agonist (if asthma); inhaled adrenaline (if laryngeal oedema)
Severe	Adrenaline 25 (intramuscular for anaphylactic shock 25/inhaled for asthma or laryngeal oedema 25); chlorpheniramine (intramuscular or slow Intravenous); hydrocortisone (intramuscular or slow intravenous)

) or albendazole (400 mg / d for 3 days) can be consider for heavy infestations. In Furuncular myiasis: petrolatum can suffocate larvae and after they dead manually can be removed.<sup>12</sup> S.I.T (specific immunotherapy) in mosquito bite allergy appears to be effective and safe treatment for both cutaneous and respiratory symptoms.<sup>23</sup> Prevention: The use of insect repellents such as diethyltoluamide (DEET) can be considered.<sup>28, 26</sup> Passive measures such as nets screens clothing can be used. Spray with insecticides (e.g., Malathion, 1-4% dust) with special attention to baseboards, rugs, floors, upholstered furniture, bed frames, mattresses, and cellar. Also treat the flea- infested cats and dogs and avoid contact with arthropods.<sup>12</sup> Tick bites are best prevented by wearing of long trousers that are tucked into boots. The best method to avoid tick bites is twofold, application of a topical deet (N, N-diethyl-m-toluamide) repellent to exposed skin,

and treatment of clothing with permethrin.<sup>28, 26</sup> Any tick if found should be removed immediately with the help of blunt, rounded forceps with using magnifying glass especially when immature ticks are found. The forceps are used to grasp the mouthparts of the tick as close as possible to the skin, and then the tick is pulled upward, perpendicular to the skin, with a continuous and steady action. Other methods for removing ticks, such as using fingers, lighted cigarettes, petroleum jelly, or suntan oil, should be avoided. The degree of tick engorgement or the time since tick exposure and discovery of the tick may be used to establish the likely duration of attachment and the risk of disease transmission.<sup>26</sup>

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