Hyperpigmented Macules Caused by Burrowing Bugs (Cydnidae) May Mimic More Serious Conditions

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PRACTICE **POINTS**

- Burrowing bugs (Cydnidae) are phytophagous and burrow to feed on plants and roots. They are more numerous during the monsoon season in tropical and temperate regions.
- Secretions from burrowing bugs cause asymptomatic, hyperpigmented, irregularly shaped macules suggestive of an exogenous cause that commonly affect clusters of patients from the same geographic locality.
- The lesions are self-limiting and must be differentiated from close mimickers to ensure adequate and appropriate patient counseling.

Burrowing bugs (Cydnidae) are small insects with spiny legs belonging to the order Hemiptera. Their secretions can lead to asymptomatic hyperpigmented macules in humans. The lesions are self-resolving and do not require treatment. Dermatologists should be aware of the clinical presentation of lesions caused by burrowing bugs, as they could be mistaken for several more serious benign and malignant pigmented conditions, leading to misdiagnosis and unnecessary investigations and treatment. In this article, we present a series of cases from the same community to demonstrate the characteristic features of hyperpigmented macules caused by exposure to burrowing bugs.

Cydnidae is a family of small to medium-sized shield bugs with spiny legs that commonly are known as burrowing bugs (or burrower bugs). The family Cydnidae includes more than 100 genera and approximately 600 species worldwide.[1] These insects are arthropods of the order Hemiptera (suborder: Heteroptera; superfamily: Pentatomoidae) and largely are concentrated in tropical and temperate regions. Approximately 145 species have been recorded in the Neotropical Region and have been included in the subfamilies Amnestinae, Cephalocteinae, and Sehirinae, in addition to Cydnidae.[2] Burrowing bugs are ovoid in shape and 2 to 20 mm in length and morphologically are well adapted for burrowing. Their life span is 100 to 300 days. Being phytophagous, they burrow to feed on plants and roots. Adult burrowing bugs have wings and can fly. They have specialized glands located in either the abdomen (nymph) or thorax (adult) that secrete odorous chemicals for self-protection.[3] The secretions contain hydrocarbonates that function as repellents and danger signals, can cause paralysis in prey, and act as a chemoattractant for mates.[4-6] They also cause hyperpigmentation upon contact with the skin.

In this article, we present a series of cases from the same community to demonstrate the characteristic features of hyperpigmented macules caused by exposure to burrowing bugs. Dermatologists should be aware of this entity to prevent misdiagnosis and unnecessary investigations and treatment.

Case Series

A 36-year-old woman and 6 children (age range, 6-12 years) presented with a widespread, acute, brown-pigmented, macular eruption with lesions that increased in number over a 1-week period. All 7 patients resided in the same locality and were otherwise systemically healthy. Initially, the index case, a 7-year-old girl, was referred to our tertiary care center by a dermatologist with a provisional diagnosis of idiopathic macular eruptive pigmentation. The patient's mother recalled noticing a tiny black insect on the child's scalp that left pigment on the skin when she crushed it between her fingers. The rest of the patients presented over the next few days: 3 of the children belonged to the same household as the index case, and there was history of all 6 children playing in the neighborhood park during late evening hours. The adult patient was the parent of one of the affected children. The lesions were associated with mild itching and tingling in 3 children but were asymptomatic in the other patients.

Clinical examination of the patients revealed multiple dark- to light-brown, discrete, irregularly shaped macules

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over the trunk, arms, and soles (eFigure 1). Dermoscopic examination of a pigmented macule showed an irregularly shaped, brownish, structureless area with accentuation of the pigment at skin creases and perieccrine pigmentation (eFigure 2). The pigmentation was unaffected by rubbing with alcohol or water. Clinicoepidemiologic parameters of the patients are summarized in the eTable.

One of the children's parents conducted a geological examination of the ground in the neighborhood park during evening hours and found tiny burrowing bugs (eFigure 3). When crushed between the fingers, these insects left a similar brownish hyperpigmentation on the skin. The parents were counseled on the nature of the eruption, and the patients were kept under observation for 2 weeks. On follow-up after 5 days, the lesions showed markedly decreased intensity of hyperpigmentation, and no new lesions were observed in any of the 7 patients.

Comment

Pentatomoidae insects generally are benign and harmless to humans. There have been isolated reports of erythematous plaques caused by *Antiteuchus mixtus* and *Edessa maculate*.[7] Malhotra et al[8] reported the first known series of cases with Cydnidae insect–induced hyperpigmented macules. The reported patients presented with asymptomatic, brown, hyperpigmented macules over exposed sites such as the feet, neck, and chest. All the cases occurred during the monsoon season in tropical and temperate regions of the world, and the patients were characteristically clustered in similar geographic areas. The causative insect was identified as *Chilocoris assmuthi* Breddin, 1904, belonging to the family Cydnidae. When it was crushed between the fingers, the skin became hyperpigmented, confirming the role of the secretions from the insect in the etiology.[8]

A second case was described by Sonthalia,[9] who also described the dermoscopic features of hyperpigmented macules caused by burrowing bugs. The lesions showed a stuck-on, clustered appearance of ovoid and bizarre pigmented clods, globules, and granules.[9] Although the lesions occur mainly over exposed sites, pigmented macules occurring over unusual sites such as the abdomen and back also have been reported in association with burrowing bugs.[10] Characteristically, the lesions initially are faint and darken with time and usually fade within a week. They can be rubbed off with acetone but persist when washed with soap and water. The fleeting nature of the pigmentation also has led to the term *transient pseudo-lentigines sign* to describe hyperpigmentation caused by burrowing bugs.[11]

Soil and plants are burrowing bugs' natural habitats, and the insects typically are seen in vegetation-rich, moist areas adjoining human dwellings (eg, parks, gardens), where clusters of cases can occur. These insects proliferate during the monsoon season in tropical and temperate areas, leading to more cases occurring during these months.

Compared to prior reports,[8,9] a few of our patients had predominant trunk and neck involvement with an occasional tingling sensation or pruritus while the rest were asymptomatic. Dermoscopic features from our patients shared similar reported features of Cydnidae pigmentation.[4,5] The accentuation of pigment over skin creases seen on dermoscopy was due to accumulation of Cydnidae secretion at these sites.

The differential diagnosis commonly includes idiopathic macular eruptive pigmentation, which is characterized by an asymptomatic progressive eruption of hyperpigmented macules over the trunk that persists from a few months up to 3 years. Other conditions in the differential include benign conditions such as acral benign melanocytic nevi, lentigines, pigmented purpuric dermatosis, and postinflammatory hyperpigmentation, as well as malignant conditions such as acral melanoma. Dermoscopy is a helpful, easy-to-use tool in differentiating these pigmentation disorders, obviating the need for an invasive investigation such as histopathologic analysis. Simultaneous involvement in a group of people living together or visiting the same place, abrupt onset, predominant involvement of the exposed sites, characteristic clinical and dermoscopic features, self-limiting course, and timing with the monsoon season should suggest a possibility of Cydnidae dermatitis/pigmentation, which can be confirmed by finding the causative bug in the affected locality.

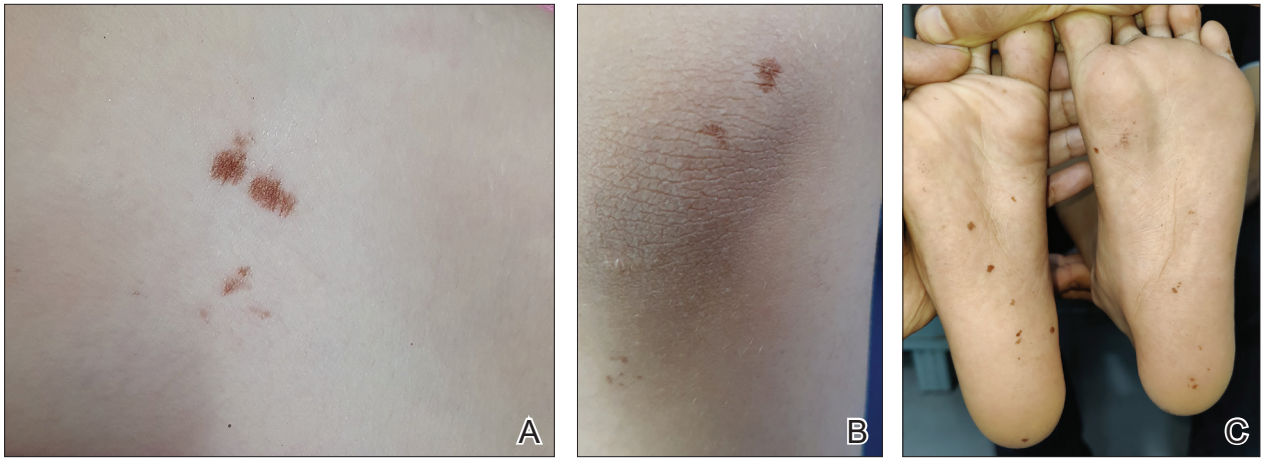
Management

No specific treatment is required for the pigmentation caused by Cydnidae, as it is self-resolving. The macules can, however, be removed with acetone. Patients must be counseled regarding the benign and fleeting nature of this condition, as the abrupt onset may alarm them of a systemic disease. Affected patients should be advised against walking barefoot in areas where the insects can be found. Spraying insecticides in the affected locality also helps to reduce the presence of burrowing bugs.

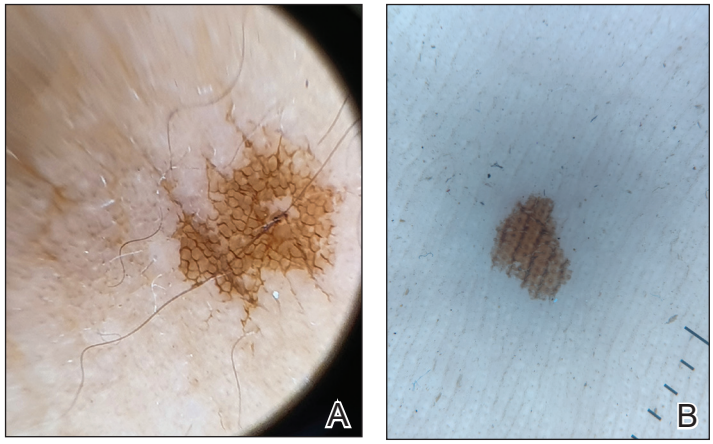
REFERENCES

1. Hosokawa T, Kikuchi Y, Nikoh N, et al. Polyphyly of gut symbionts in stinkbugs of the family Cydnidae. *Appl Environ Microbiol*. 2012; 78:4758-4761.
2. Schwertner CF, Nardi C. Burrower bugs (Cydnidae). In: Panizzi A, Grazia J, eds. *True Bugs (Heteroptera) of the Neotropics. Entomology in Focus, vol 2*. Springer; 2015.
3. Lis JA. Burrower bugs of the Old World: a catalogue (Hemiptera: Heteroptera: Cydnidae). *Genus (Wrocław)*. 1999;10:165-249.
4. Hayashi N, Yamamura Y, Ôhama S, et al. Defensive substances from stink bugs of Cydnidae. *Experientia*. 1976;32:418-419.
5. Smith RM. The defensive secretion of the bugs Lampropharadifasciata, Adrisanumeensis, and Tectocorisdiophthalmus from Fiji. *NZ J Zool*. 1978;5:821-822.
6. Krall BS, Zilkowski BW, Kight SL, et al. Chemistry and defensive efficacy of secretion of burrowing bugs. *J Chem Ecol*. 1997;23:1951-1962.
7. Haddad V Jr, Cardoso J, Moraes R. Skin lesions caused by stink bugs (Insecta: Heteroptera: Pentatomidae): first report of dermatological injuries in humans. *Wilderness Environ Med*. 2002;13:48-50.
8. Malhotra AK, Lis JA, Ramam M. Cydnidae (burrowing bug) pigmentation: a novel arthropod dermatosis. *JAMA Dermatol*. 2015;151:232-233.
9. Sonthalia S. Dermoscopy of Cydnidae pigmentation: a novel disorder of pigmentation. *Dermatol Pract Concept*. 2019;9:228-229.
10. Poojary S, Baddireddy K. Demystifying the stinking reddish brown stains through the dermoscope: Cydnidae pigmentation. *Indian Dermatol Online J*. 2019;10:757-758.
11. Amrani A, Das A. Cydnidae pigmentation: unusual location on the abdomen and back. *Br J Dermatol*. 2021;184:E125.

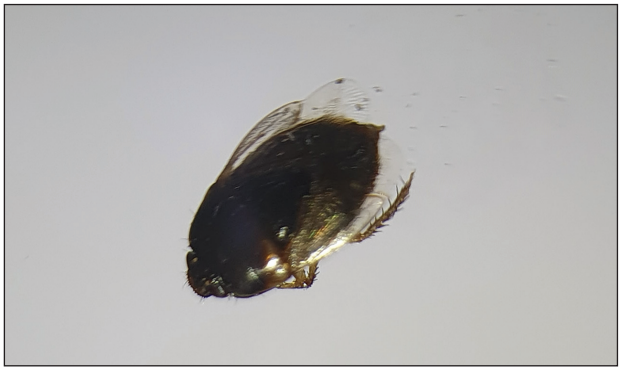
APPENDIX



eFIGURE 1. A-C, Discrete, irregularly shaped, brown to dark brown macules on the trunk, elbow, and soles.



eFIGURE 2. A and B, Dermoscopy showed irregularly shaped, homogenous, brownish, structureless areas with accentuation along skin creases and around eccrine openings (original magnification ×10 and ×10).



eFIGURE 3. A burrowing bug (Cydnidae) found at the neighborhood park visited by all patients.

eTABLE. Clinicoepidemiologic Parameters of Patients

Patient No.	Age, y/ Sex	Anatomic sites involved	Symptoms
1	7/F	Trunk, back, arm	Mild itching
2	12/F	Trunk, upper back	Mild burning
3	36/F	Tips of fingers of right hand	Asymptomatic
4	6/M	Neck, trunk	Asymptomatic
5	6/M	Neck, trunk, left elbow	Mild tingling
6	6/M	Neck	Asymptomatic
7	10/M	Soles	Asymptomatic

Abbreviations: F, female; M, male.