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Case Report

# Acute Generalized Exanthematous Pustulosis: An Unusual Case due to Spider Bite

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## ABSTRACT

Acute generalized exanthematous pustulosis is an infrequent but severe pattern of cutaneous adverse reaction. It is characterized by the sudden appearance of sterile pustules on edematous-erythematous skin, which is mostly caused by the consumption of medications. However, it may also be associated with viral infections, toxins, or food allergens, although this is rare. We reported a case of AGEP in a 33-year-old male shortly after a spider bite, a rare cause of AGEP. It was improved by oral corticosteroid treatment after seven days.

**Keywords**: Acute generalized exanthematous pustulosis, Insect bite, Non-follicular pustules, Pustular rash, Spider bite.

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## INTRODUCTION

AGEP is primarily a type of cutaneous adverse reaction characterized by the formation of pustules on the skin. The use of medications frequently induces it and manifests as small, sterile, non-follicular pustules that appear over erythematous skin.[1,2] In addition to its cutaneous symptoms, systemic symptoms, such as fever and leukocytosis, can occur. The incidence of this illness is approximately 1-5 cases per million individuals in the general population.[3] Drug-induced cases are 90%. In some rare cases, the condition may be triggered by infections, exposure to mercury, and seldom due to spider bites, as reported in this case. The spider venom contains sphingomyelinase, which can stimulate the release of cytokines, including a significant amount of IL-8 and GM-CSF, which in turn causes AGEP.[4]

Histologically, it is characterized by intraepidermal pustules, spongiosis in the epidermis and papillary dermis, occasional necrotic keratinocytes, perivascular neutrophilic and eosinophilic infiltrates in the upper dermis.[5] The case reported here is of a patient with a generalized pustular rash after a spider bite. This is the only reported case from Pakistan and probably the first. This highlights the rare but potential role of spider bites as a triggering factor for AGEP, which is often underestimated.

## CASE REPORT

A 33-year-old male was admitted with a 3-day history of generalized pustular rash after a common house spider bite on his left forearm. The Rash was initially itchy, erythematous and edematous involving palms, which progressed to the upper limb, trunk, axillae and lower limbs, sparing the head, neck and groin. Pustules were formed on the third day: numerous small, pruritic, non-follicular and tender. He also developed a fever, documented (>38°C) with chills, lasted two days and was relieved by Paracetamol. He had no history of drug intake, psoriasis, or other skin disorders.

An erythematous maculopapular rash was observed upon physical examination, with small non-follicular pustules that lacked scaling. The rash was primarily on the trunk, axillae, and upper and lower limbs. Over the next three days, the eruption became more confluent with widespread pustulation on a background of extensive erythema (Figure-1). Mucous membranes were spared, & the rest of the examination was unremarkable. Lab Investigations showed TLC-6.3 10x3/µl, Platelets-200 10x3/µl, Eosinophils-09%, ESR-29 mm/1st hr. Urinalysis, LFTs, RFTs, CXR, ANA, and D-dimer were normal.

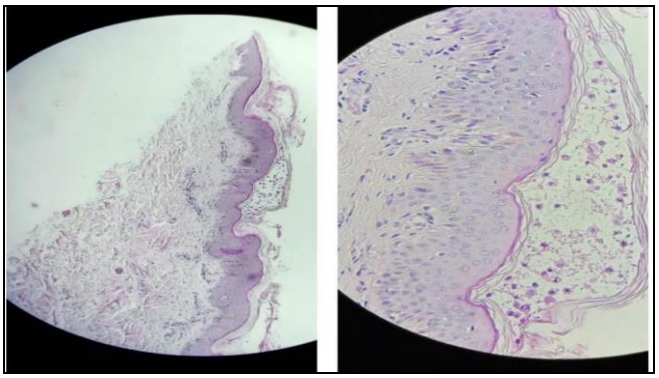

**Figure-1: (a) Maculopapular Eruption on the Lower Limb on Day-3. (b) Diffuse Erythema and Non- Follicular Pustules on the back on Day-6**

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A skin biopsy from the forearm revealed hyperkeratosis, edematous epidermis with spongiosis, and a sub-corneal bulla containing lymphocytes, neutrophils and scattered eosinophils. The dermis showed dilated vessels and mixed perivascular infiltrate consisting of lymphocyte eosinophils and RBC extravasation in the upper dermis (Figure-2) . A detailed history of clinical and pathological correlations made a diagnosis of AGEP. Drug aetiology was excluded, and spider bite was implicated as the culprit.

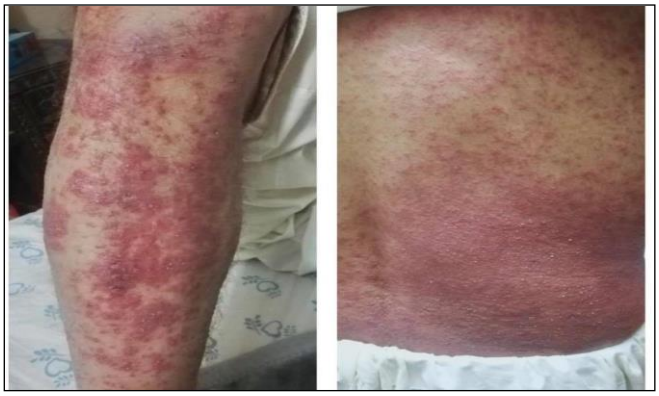

**Figure-2: (a) Inflammatory Perivascular Infiltrate in the Dermis. (b) Sub Corneal Bulla with Neutrophils and Lymphocytes**

He was given Inj. Hydrocortisone 200 mg/IV and Inj. Pheniramine 50 mg/IM stat, then started with oral prednisolone 20mg twice daily, Levocetirizine 5mg at night, Ebastine 10mg in the morning and topical steroids. After four days of treatment, the rash started to resolve with desquamation, and the pain subsided, but itching persisted. The patient recovered completely in 7 days.

## DISCUSSION

AGEP is a relatively rare cutaneous condition triggered primarily by drugs, less commonly by infections. AGEP and generalized pustular psoriasis have clinical and histological similarities.However, our patient neither had any personal or familial history of psoriasis nor prior drug intake.

Davidovici et al. from Israel, Ben Said et al. from Tunisia, and Ermertcan et al. from Turkey reported cases of AGEP triggered by spider bite based on the same characteristic skin lesions, chronology of events and exclusion of other causes like in our case.[6-8] When AGEP is triggered by medication, the prognosis is better. However, due to the limited number of reported cases associated with spider bites, it is unclear if the prognosis is affected in these instances.[9] Our patient showed smooth recovery & had no complications after a 6-month follow-up. Euro SCAR Group Scoring System was used in the identification of AGEP cases. Our patient scored+9, indicating a definite diagnosis of AGEP (Table) .

**Table: AGEP Score of Patient determined by the use of Criteria from EuroSCAR Study Group**

| Criteria | Description | Score |
|---|---|---|
| **Morphology** | | |
| Pustules | Typical, non-follicular and sterile | +2 |
| Erythema | Typical, diffuse | +2 |
| Distribution | Compatible, trunk & members | +1 |
| Desquamation post-pustulatio | Yes | +1 |
| Additional findings | No | |
| **Course** | | |
| Mucosal involvement | No | 0 |
| Acute start (<10 days) | Yes | 0 |
| Resolution <15 days | Yes | 0 |
| Fever (≥38°C) | Yes | +1 |
| Polymorphonuclear (≥7.000) | No | 0 |
| Histopathology | | |
| Biopsy of skin | Intraepidermal pustule with dermal edema, perivascular neutrophilic infiltrate | +2 |
| Total Score | | +9* |

*Interpretation: ≤0: absent AGEP; 1-4: possible; 5-7: likely ; 8-12: AGEP absolute diagnosis. *total score of our patient is 9 which makes a definite diagnoses of AGEP*

The diagnosis was likely missed if history had not been probed and this rare cause needed identification. In conclusion, only a small number of cases involving AGEP triggered by spider bites have been documented in the literature, 10 with the majority of cases still being attributed to drug-induced causes. Nonetheless, it is important to consider spider bites as a potential cause of AGEP, as they can lead to serious instances of non-drug-induced AGEP.

**Conflict of Interest:** None.

**Authors Contribution**

Following authors have made substantial contributions to the manuscript as under:

MGC: & NA: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

TMM:, SAS: & MH: Critical review, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

## REFERENCES

1. Aiempanakit K, Apinantriyo B. Clindamycin-induced acute generalized exanthematous pustulosis: A case report. Medicine (Baltimore) 2020; 99(21): e20389. https://doi.org/10.1097/MD.0000000000020389.

2. Alniemi DT, Wetter DA, Bridges AG, El-Azhary RA, Davis MDP, Camilleri MJ, et al. Acute generalized exanthematous pustulosis: clinical characteristics, etiologic associations, treatments, and outcomes in a series of 28 patients at Mayo Clinic, 1996-2013. Int J Dermatol 2017; 56(4): 405–414. https://doi.org/10.1111/ijd.14.
3. Nili A, Zarei E, Ghamari A, Farid AS, Tavakolpour S. Acute generalized exanthematous pustulosis with a focus on hydroxychloroquine: A 10- year experience in a skin hospital. Int Immunopharmacol 2020; 89(Pt B): 107093.
4. Milman L de M, Müller GP, Souza PRM, Grill AB, Rhoden DLB, Mello-da-Silva CA, et al. Acute generalized exanthematous pustulosis associated with spider bite. An Bras Dermatol 2016; 91(4): 524–527. https://doi.org/10.1590/abd1806-4841.20164045
5. Zheng J, Gao Y, Yi X, Ding Y. A case of ceftriaxone-induced acute generalized exanthematous pustulosis/generalized pustular psoriasis overlap. Case Rep Dermatol 2018; 10(1): 69–75.
6. Ermertcan AT, Demirer O, Inanir I, Bilaç C, Temiz P. Acute generalized exanthematous pustulosis with lymphangitis triggered by a spider bite. Cutan Ocul Toxicol 2010; 29(1): 67–69.
7. Davidovici BB, Pavel D, Cagnano E, Rozenman D, Halevy S; EuroSCAR; Regi-SCAR study group. Acute generalized exanthematous pustulosis following a spider bite: report of 3 cases. J Am Acad Dermatol 2006; 55(3): 525-529.
8. Ben Said Z, Saidi W, Boussofara L, Ghariani N, Belajouza C, Sriha B, et al. Pustulose exanthématique aiguë généralisée succédant à une morsure d'araignée: trois observations tunisiennes. Ann Dermatol Venereol 2010; 137(12): 813–818. https://doi.org/10.1159/000488076.
9. Dirican F, Acar A, Yaman B, Gerçeker Türk B. Acute generalized exanthematous pustulosis caused by a probable spider bite: A case report and review of the literature. Turkderm-Turk Arch Dermatol Venereol 2020; 54(1): 152-155. https://doi.org/10.4274/turkderm.galenos.2020.30906
10. Sidoroff A, Dunant A, Viboud C, Halevy S, Bavinck JN, Naldi L, et al. Risk factors for acute generalized exanthematous pustulosis (AGEP)-results of a multinational case-control study (EuroSCAR). Br J Dermatol 2007; 157(5): 989-996.