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Acute Generalized Exanthematous Pustulosis Resembling Generalized Pustular Psoriasis In A Patient with Psoriasis History: A Diagnostic Challenge

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Abstract

Acute generalized exanthematous pustulosis (AGEP) and generalized pustular psoriasis (GPP) are two rare dermatologic conditions that have similar clinical presentations. This case report discusses the challenges in differentiating AGEP and GPP in a 27-year-old man with a history of psoriasis. The patient presented with complaints of red patches and purulent pustules all over the body since 3 days after taking Cefadroxil. Physical examination showed papules and pustules with erythema base. Eosinophilia was found on laboratory examination. Skin biopsy results supported the diagnosis of AGEP with hyperkeratosis, mild spongiosis, and inflammation in the dermis. Based on the history, clinical presentation, laboratory and biopsy results, the patient was diagnosed with AGEP suspected as an allergic reaction to Cefadroxil. The patient was hospitalized with systemic and supportive therapy. This case emphasizes the importance of thorough evaluation including history, clinical findings, and supporting examinations in differentiating AGEP and GPP.

Keyword : *APEG, GPP, Psoriasis, Drug Allergy.*

Introduction Section

Acute Generalized Exanthematous Pustulosis (AGEP) is a drug-induced allergic reaction of the skin, characterized by the sudden onset of erythematous patches and sterile non-follicular pustules scattered across the skin. AGEP is a cutaneous eruption response to specific medications, such as antibiotics (Morgan, 2021). The prevalence of AGEP in Indonesia has not been well documented in the existing literature. However, this condition is considered rare on a global scale, with an estimated incidence of 1 to 5 cases per million individuals per year (Darmawan & Diba, 2019).

AGEP must be differentiated from a range of dermatological disorders that present with pustular rashes, including bacterial folliculitis, Sweet's syndrome, subcorneal pustular dermatosis, and generalized pustular psoriasis (Duman et al., 2017). Clinically, a comprehensive examination is required to distinguish between AGEP and generalized pustular psoriasis (GPP). Although AGEP and GPP share similar clinical features, they have distinct pathogenesis and treatment approaches (Takaichi et al., 2024). AGEP is a rare dermatologic condition characterized by the sudden appearance of sterile pustules distributed across the entire body, accompanied by fever, chills, and generalized discomfort. This condition may be triggered by various factors, such as medications, infections, or stress, and often occurs in individuals with no prior history of psoriasis. In contrast, generalized pustular psoriasis is a rare variant of psoriasis,

characterized by the widespread appearance of sterile pustules on the body in patients with a history of psoriasis (Morgan, 2021). Psoriasis itself is a chronic inflammatory skin disease, characterized by erythematous plaques covered with thick, silvery-white scales and well-defined borders (Nuroctaviani & Tjiahyono, 2022). An accurate differential diagnosis between AGEP and GPP is crucial to prevent inappropriate treatment and avoid life-threatening complications.

The case of AGEP in a psoriasis patient has been reported by Hawsawi et al. (2014), resulting from the use of clindamycin and ceftriaxone. Another case was reported by Sari et al. (2021) in a patient diagnosed with AGEP after consuming cefadroxil. Following treatment with steroids, the patient experienced a relapse with the appearance of new pustules, leading to a final diagnosis of GPP.

The challenge in diagnosing AGEP in psoriasis patients lies in the clinical presentation and biopsy findings of AGEP, which resemble those of GPP. Clinically, AGEP symptoms include the sudden onset of a rash that lasts for a short period, with a polymorphic rash pattern associated with the use of medications. This condition may resolve spontaneously after discontinuation of the offending drug, without recurrence, and is not accompanied by arthritis or a personal or family history of psoriasis. The differences in biopsy results between AGEP and GPP have not been well documented, and some experts even argue that it is impossible to distinguish between the two based solely on biopsy findings.

Case Description

A 27-year-old male presented to the hospital with complaints of red patches and pustules on his face, torso, arms, and legs, which appeared following cefadroxil consumption from a primary health center three days prior. Initially, the lesions appeared on the face and then spread to the torso, arms, and legs. The symptoms were accompanied by a high fever. The patient has a history of psoriasis, diagnosed in 2020, and has been receiving treatment at Moewardi General Hospital in Surakarta. The patient denies any drug or food allergies.

On physical examination, the patient appeared restless and uncomfortable, with a conscious and alert mental state. His blood pressure was 146/82 mmHg, heart rate 100 beats per minute, body temperature 38.9°C, and respiratory rate 20 breaths per minute. Dermatological examination of the face, torso, arms, and legs revealed multiple diffuse papules and pustules on an erythematous base, with some lesions displaying brownish crusting.

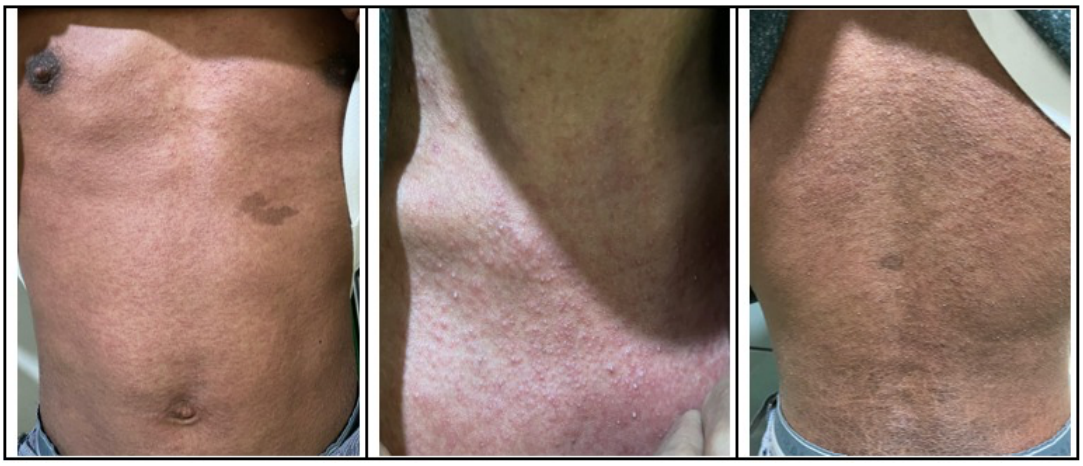

Figure 1. The body shows papules and pustules with an erythematous base, diffuse, multiple, miliary, some accompanied by brownish crusts.

In the routine blood laboratory examination, the patient's complete blood count results were within normal limits. An eosinophil count was also recommended, revealing a level of 9%, indicating a hypersensitivity reaction in the patient.

Histopathological examination of a lesion on the lower left arm showed erythema. The histopathology results indicated epidermal skin tissue with hyperkeratosis, basket-weave orthokeratosis, hypogranulosis, mild epidermal atrophy, mild spongiosis, slight focal elongation of the rete ridges, and hyperpigmentation. The dermis showed partial edema with a moderate infiltration of lymphocytes, histiocytes, and a few hemosiderophages, particularly in the perivascular area and upper dermis; and no signs of malignancy were found.

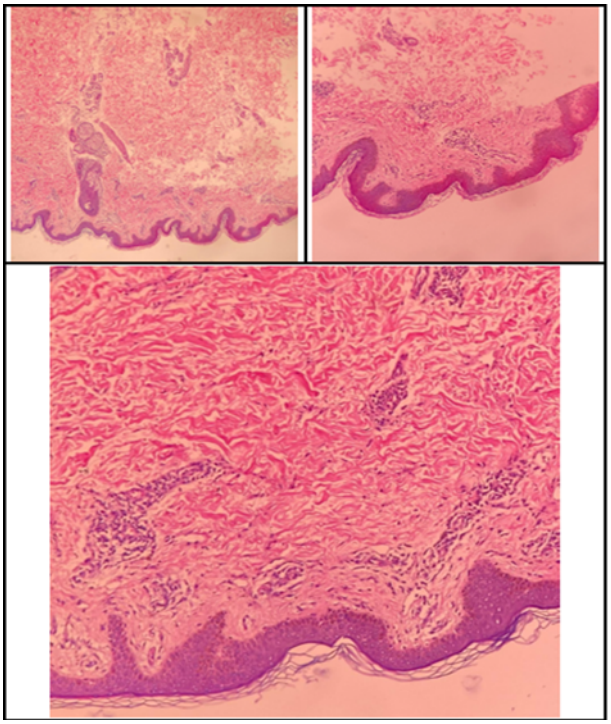

Figure 2. Histopathological examination results

The patient was diagnosed with AGEP (Pustular Exacerbation of Psoriasis) based on the symptoms, including fever and recent drug intake within the past week. Physical examination revealed multiple diffuse, erythematous-based papules and pustules with some brownish crusting on the face, torso, arms, and legs, supported by routine blood and histopathology examinations.

The suspected causative medication was discontinued, and pharmacological therapy was initiated, including an injectable steroid at a dose of 1 mg/kg body weight, an antihistamine, a combination of topical antibiotic and steroid, and a moisturizer applied twice daily. The patient showed improvement after 8 days of hospitalization

Discussion

Acute Generalized Exanthematous Pustulosis (AGEP) and Generalized Pustular Psoriasis (GPP) are two conditions with similar clinical symptoms, characterized by pustules on inflamed skin. However, AGEP and GPP have distinguishing features that aid in differentiating the two conditions (Morgan, 2021). In this case, the patient developed red patches and pustules accompanied by high fever (38.9°C) three days after taking cefadroxil. According to the literature, AGEP is characterized by acute-onset symptoms, including high fever, occurring 1-14 days after drug exposure leading to an eruption. In contrast, GPP typically lacks fever and has a longer onset period, spanning several weeks to months (Haswawi et al., 2014).

The suspicion that cefadroxil may have triggered the condition in this case is based on previous reports indicating that AGEP can be induced by certain medications, including beta-lactam antibiotics, a class to which cefadroxil belongs (Sari et al., 2021). On the other hand, GPP is generally triggered by genetic alterations, infections, and abrupt discontinuation of treatments (Gössinger et al., 2024).

Based on clinical examination, the patient's presentation meets the criteria for AGEP, with findings of multiple miliary papules and pustules on an erythematous base, diffusely distributed with discrete impressions, accompanied by facial edema. This differs from GPP, which generally presents as edematous and erythematous plaques on otherwise normal skin, with numerous miliary pustules on the plaques that eventually coalesce to form “lakes of pus” (Gayatri, 2014; Stadler et al., 2022).

In this case, laboratory blood tests revealed eosinophilia, with a count of 9%. Eosinophilia in AGEP can occur because AGEP involves immune-mediated reactions in which CD4+ T cells exhibit a Th2 profile, resulting in increased interleukin-5 (IL-5) production, which stimulates eosinophil growth and proliferation. In contrast, GPP pathogenesis is

more closely associated with genetic mutations (IL36RN and CARD14), with laboratory findings typically showing leukocytosis and neutrophilia (Gustavo et al., 2022; Gössinger et al., 2024; Jatmiko, 2015).)

Histopathological biopsy findings in this case also support a diagnosis of AGEP, showing hyperkeratosis, basket-weave orthokeratosis, hypogranulosis, mild spongiosis, and dermal inflammation. Although not definitive, these features are more commonly seen in AGEP than in GPP, which typically displays sterile spongiform pustules, neutrophils in the stratum corneum, parakeratosis, psoriasiform epidermal hyperplasia, insignificant dermal papilla edema, absence of eosinophils, and dilated papillary dermal blood vessels (Gössinger et al., 2024).

Based on the anamnesis, clinical presentation, laboratory results, and histopathology that are in accordance with the characteristics of AGEP, it can be concluded that the patient was diagnosed with AGEP triggered by the consumption of the beta-lactam antibiotic cefadroxil. This diagnosis can be distinguished from GPP which has different characteristics.

Conclusion

This case reports a 27-year-old male with a history of psoriasis who experienced a drug reaction characterized by erythematous spots and purulent pustules, accompanied by high fever, following the administration of the antibiotic cefadroxil. Based on clinical symptoms, laboratory findings indicating eosinophilia, and histopathological features, the patient was diagnosed with AGEP induced by the use of cefadroxil. AGEP is a drug hypersensitivity reaction that can be differentiated from GPP by its acute onset, fever, eosinophilia, and characteristic histopathological findings. The patient was successfully treated with steroid injection therapy, antihistamines, and topical treatment, resulting in improvement after 8 days of hospitalization.

Conflict of Interest

The author declares that he has no conflict of interest

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