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Case Report

Successful treatment of generalized pustular psoriasis in a ten-year old child with secukinumab: Previously recalcitrant with conventional therapy

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Abstract Currently there is a lack of standardized treatment guidelines for pediatric psoriasis treatment using biologic agents. Children are among special population usually excluded from clinical trials, therefore making guidelines more challenging to be published. Especially in generalized pustular psoriasis, a rare form of psoriasis, recalcitrant and difficult to manage cases of pediatric psoriasis may require more options than topical, phototherapy or systemic treatments. We present a case of a ten-year-old female diagnosed with generalized pustular psoriasis in the last four years, successfully treated with secukinumab after years of treatment to no avail

Key words
Generalized pustular psoriasis; Secukinumab; Biologic agent; Pediatric.

Introduction

Generalized pustular psoriasis (GPP) is an uncommon type of psoriasis that usually occurs with or without psoriasis vulgaris.[1] Characterized by abrupt eruption of sterile pustules over trunk, extremities and nail beds, this variant of psoriasis rarely affects children and the cause is unknown. Trigger factors may include infections, psychological stress or Koebner phenomenon that may further exarcerbate disease. Generalized pustular psoriasis may be life-threatening with complications include hypocalcemia, bacterial infections, sepsis or dehydration. There is lack of randomized trial in special population like pregnant mothers and children.[2] GPP in paediatric population usually is more benign. Systemic therapy usually includes methotrexate (MTX), oral retinoids, cyclosporine A (CyA), phototherapy or biologic agents. Acitretin is usually chosen due to its efficacy, however it has concerns regarding premature epiphyseal closure and disturbance of lipid metabolism.[1] Hence, close monitoring of lipid profile and X-ray imaging is required especially among paediatric population. Activation of cytokines initiate GPP, such as TNF-alpha, IL-17, IL-12, and IL-23; therefore, these cytokines are now therapeutic targets in GPP.[3] Therefore, anti-IL-17A monoclonal antibody like secukinumab is chosen due to its good response for patients with GPP.[1] In Indonesia, there is yet to be published treatment guidelines regarding use of biologic agents in pediatric population, as children, pregnant and nursing mothers are usually among the populations spared from clinical trials, little guidelines and recommendations by experts are published as there is lacking case reports.

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Figure 1 Initial lesions.

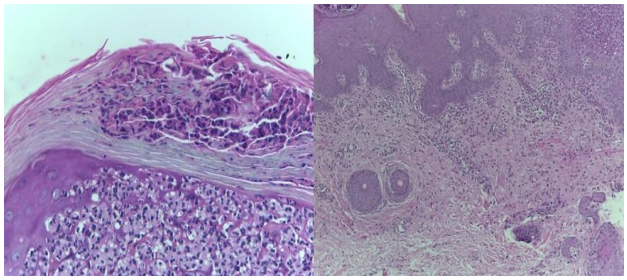

Figure 2 Intraepidermal abscess with parakeratotic epidermisacanthosis (magnification 40x) , neutrophil on superficial dermis (magnification 100x).

Case Report

A ten-year-old Indonesian female came to our clinic with sterile pustule and erythematous plaques all over the body. Her first lesion erupted in 2016, when she was 6-year-old and new lesions kept appearing from time to time **(Figure 1)**. Prior to lesions, she initially felt fever and immediate skin lesions, including her palms and soles. Her past medical history was normal, and her immunization history was complete. Previous family history of psoriasis was denied. Physical examination revealed "lake-of-pus" pustules on trunk, abdomen, upper and lower extremities including nail, palm, and soles. Patient had undergone biopsy and histopathological examination revealed intraepidermal abscess with parakeratotic epidermis, neutrophil on superficial dermis **(Figure 2)**. Patient received numerous treatments from previous pediatrician and dermatologists. She received acitretin from 2017-2018, with little improvement. She was then referred to a pediatrician and received cyclosporine 50mg twice daily from 2018-2019 but treatment was disappointing as well. Patient then came to clinic in late 2019. Patient came with multiple pustules covering scalp, body surface area (BSA) 8%. We initially did blood examination, which was normal. Patient was 36 kg at that time and was started on Acitretin 25mg per day. Patient then came again on July 2019 and additional cetirizine per oral, mycophenolate mofetil 500 mg, topical mometasone furoate cream 0.1% and fucidic acid 2% cream over the lesions. The treatment was continued over the year until March 2020, given acitretin 1x25mg and mometasone furoate cream 0.1% cream only on pustule area. Patient was then started with secukinumab in March 2020 **(Figure 3)**. Patient weight was 45.5 kg. Initial dose was 75 mg per week, and clear of lesion was achieved at third injection, and treatment continued until six injections till May 2020. Patients complained no side effects, but gained 20 kilograms over the years due to steroid consumption and poor diet management. Since then, patient had clear of lesions for 7 months **(Figure 4)**.

Discussion

Secukinumab is a fully human recombinant monoclonal antibody that specifically targets interleukin-17A (IL-17A).[4] Initial treatment includes loading dose of 150 mg to 300 mg per week, followed by injections every 4 weeks. Efficacy of drug is measured by calculating PASI, hopefully achieving PASI 75 at week 12.[5] Secukinumab is a safe option, however its side effects reported are infections, worsening of inflammatory bowel disease, and hypersensitivity reactions.[1,4] Patients are advised to avoid live vaccines while receiving treatment.[6] Monitoring of blood profile include. Long term administration of secukinumab is reported to be safe and effective after 52 weeks of treatments.[4] In this patient, there is no side

Figure 3 Before secukinumab therapy.

Figure 4 After secukinumab therapy.

effects such as diarrhea, infections or headache experienced by the patient. Patient, however experienced 20-kg gain in weight, due to poor diet, steroid consumption and minimal exercise in the Coronavirus-19 pandemic situation. No complaints of fever, disrupted bowel movement and signs of infections to be found in this case.

In paediatric population, latest treatment involves biologic agents.[7] Secukinumab, however, is considerably safe and effective for life-threatening conditions of psorisasis such as generalized pustular psoriasis.[1] The United States Food and Drug Administration (FDA) and European Medicine Agency has approved adalimumab and ustekinumab for severe and moderate plaque psoriasis in children.[7] Recently, secukinumab has been approved for first-line systemic treatment in pediatric psoriasis, specifically for moderate-to-severe psoriasis.[7,8] Secukinumab has safety profile consistent and approved for chronic conditions in special population like children, pregnant mothers or elderly.[9,10]

Conclusion

Biologic agent is a safe, effective drug in paediatric population with generalized pustular psoriasis. In this case, remission is achieved after six injections and no side effects were reported.

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