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GUTTATE PSORIASIS THAT EVOLVES TO CHRONIC PLAQUE PSORIASIS INDUCED BY ATYPICAL BACTERIAL INFECTION

Jesryn Dhillon, Cut Putri Hazlianda*
Dermatology and Venereology Department, Faculty of Medicine, Universitas Sumatera Utara, Jalan Dr. T. Mansur No.9, Padang Bulan, Medan, Sumatera Utara 20154, Indonesia
*cut.putri@usu.ac.id

ABSTRACT
Guttate psoriasis is the second most common variant of psoriasis found in children and young adults. It is known that several factors such as infections, alcohol consumption, drugs, trauma, acute discontinuation of potent topical or systemic corticosteroids, body mass index, and endocrine disorders are known to be associated with the occurrence and development of guttate tu. This study aims to report a case of varicella with bronchopneumonia in an adult patient. Data were collected through anamnesis, physical examination, laboratory and microbiological investigations, and follow-up assessments, then analyzed qualitatively and presented descriptively as a case report. A 27-year-old man came to our polyclinic with multiple erythematous papules and multiple plaques, milliar-lenticular-nummular in size, discrete, accompanied by the white scale on the scalp, thoracic, vertebral, axillary, right, and left brachial and lower extremities. Two throat swab examinations showed different bacterias and were later found to be induced by periodontitis. This patient was then treated for chronic plaque psoriasis with methotrexate and showed good progress.

Keywords: chronic plaque psoriasis; guttate psoriasis; kingella kingae; periodontitis; spinghomonas paucimobilis

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INTRODUCTION

Guttate psoriasis is the second most common variant of psoriasis found in children and young adults (<30 years). Guttate comes from Latin, namely gutta which means "a drop". (Damayanti et al., 2021) The clinical picture of guttate psoriasis is small pink plaques like water droplets with a diameter of 0.5-1 cm. In the early stages, it is usually accompanied by a little scale with a lesion diameter of 0.2-1 cm, round or slightly oval, then spreads discretely centripetally, especially in the upper body, proximal extremities, face, ears, and head. (Darod et al., 2023) Guttate psoriasis has several immunopathological signs similar to plaque psoriasis, such as excessive activation of Th1 and Th17 cells, genetic association with the human leukocyte antigen (HLA)-CW6 allele, and group A streptococcus infection. It is known that several factors can cause psoriasis, including such as infections, alcohol consumption, drugs, trauma, acute discontinuation of potent topical or systemic corticosteroids, body mass index, and endocrine disorders. In recent years, pathogens such as Helicobacter pylori, Malassezia, Candida, human immunodeficiency virus, human papillomavirus, and hepatitis C virus, as well as Sarcoptidae are known to be associated with the occurrence and development of psoriasis. (Murti et al., 2024; Earlia et al., 2023) The prognosis for guttate psoriasis is said to be better compared to other forms of psoriasis, however, apart from the eruption being able to disappear spontaneously, the eruption can also spread to become chronic plaque psoriasis or reappear after several months to years. (Murti et al., 2024; Ibraheim & North, 2024; Falls, 2020) This case report aims to describe the clinical course of guttate psoriasis evolving into chronic plaque psoriasis following an atypical bacterial infection and to highlight the role of infection as a potential trigger in psoriasis progression.

METHOD

This article is a case report that presents the diagnosis, clinical management, and follow-up care of a patient. Data for this case were obtained through anamnesis, physical examination, and relevant supporting investigations. The collected data were analyzed qualitatively and are presented in a narrative format. This report presents a case of guttate psoriasis that evolved into chronic plaque psoriasis, induced by an atypical bacterial infection. It highlights contributing risk factors, outlines the clinical progression, and aims to provide insights for clinical practice—particularly in understanding the potential role of bacterial infections in triggering or exacerbating psoriatic disease and in guiding optimal therapeutic strategies.

CASE PRESENTATION

A 27-year-old man came to the dermatology and venereology polyclinic at Prof. Hospital. Dr. USU CPL on June 22, 2023, with complaints of the appearance of red, thick, scaly patches, the size of corn kernels to coins, accompanied by itching almost all over the body since approximately 1 month ago. One week before this complaint appeared, the patient had a history of fever, sore throat, cough, runny nose, and diarrhea. The patient did not seek treatment for this complaint. About 2 weeks later, reddish spots appeared, initially on the chest, then spread to almost the entire body. The patient had no response toward the treatment of topical corticosteroid previously. History of malignancy or other systemic disease was denied. The patient works as an online motorbike taxi driver. On physical examination, the general condition is normal. On dermatological examination, multiple erythematous papules and multiple erythematous plaques, milliar-lenticular-nummular in size, discrete, accompanied by the white scale on the scalp, thoracic, vertebral, axillary, right, and left brachial and lower extremities (Figure 1). The Psoriasis Area Severity Index (PASI) score was 11.8 and the Dermatology Life Quality Index (DLQI) was 21.

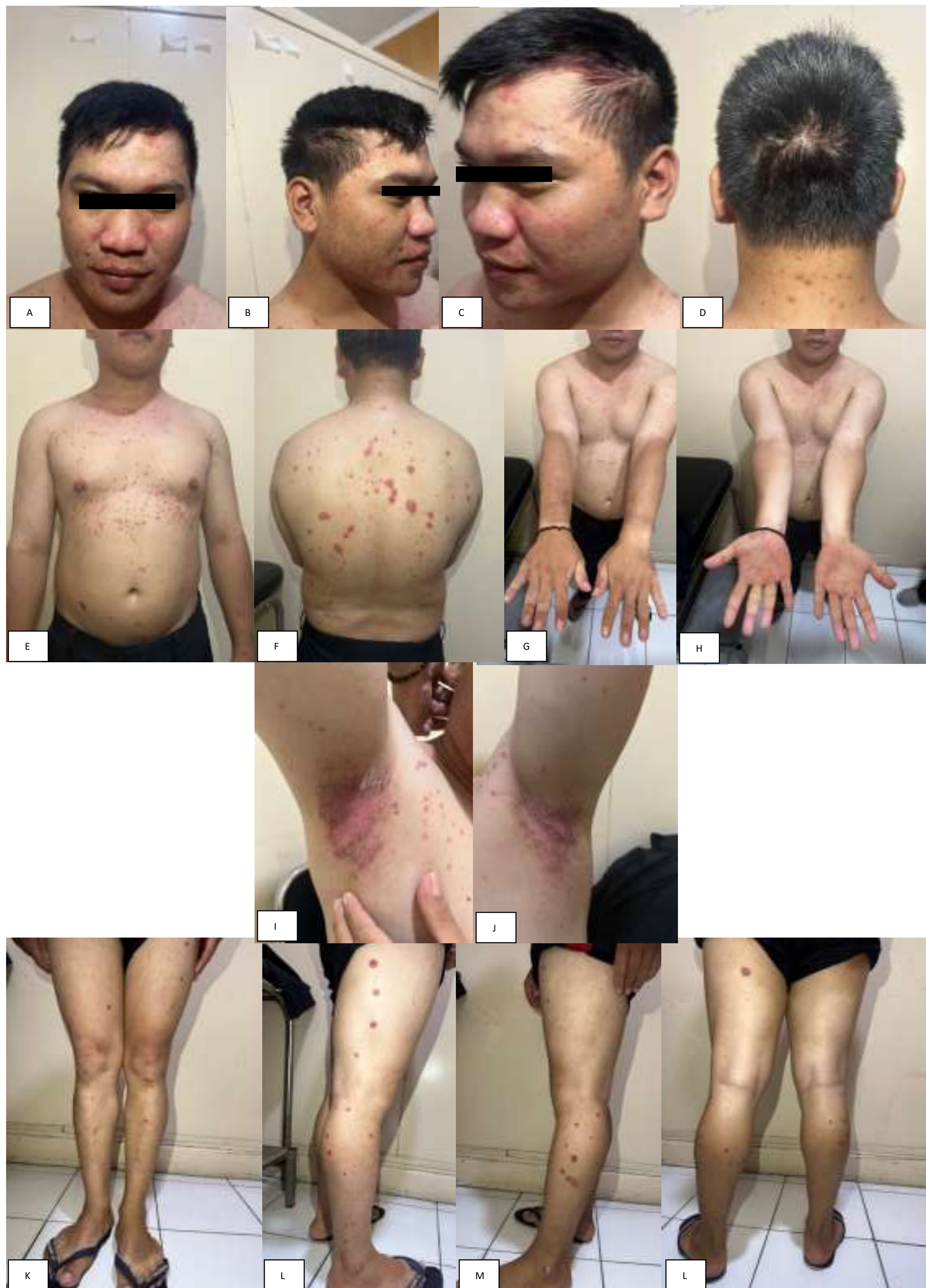

Figure 1. Patient's initial symptoms

The patient was differentially diagnosed with guttate psoriasis, pityriasis rosea, and tinea corporis. Based on the history, physical examination, and supporting examinations, the patient was diagnosed with guttate psoriasis. Topical therapy given is in the form of a moisturizer, namely Carmed (10% urea), 1% hydrocortisone cream which is applied to the facial area 2 times a day, and 0.25% desoximethasone cream with 3% salicylic acid added which is applied

to reddish rashes other than the face. The systemic therapy given is cetirizine 1x10mg to reduce itching, taken at night. Patients are asked to avoid scratching the skin. The results of the patient's throat swab examination showed bacterial colonization with *Kingella kingae*, and the patient was given the ciprofloxacin 2x500 mg for 7 days.

One month later, the red spots became thicker and wider. The patient's PASI score increased to 16.5. At this time, the patient had had the rash for 4 months and there were no signs of improvement of his guttate psoriasis despite previous antibiotic therapy. The patient's guttate psoriasis progressed to moderate-grade chronic plaque psoriasis, with PASI and DLQI >10. The patient was then started on methotrexate 5 mg/week. The patient's topical therapy was continued. Another throat swab examination was done, and we found the colonization of *Spinghomonas paucimobilis*. Another round of ciprofloxacin was given.
The patient was also consulted by the dentist and was found to have periodontitis. Dental care was provided.

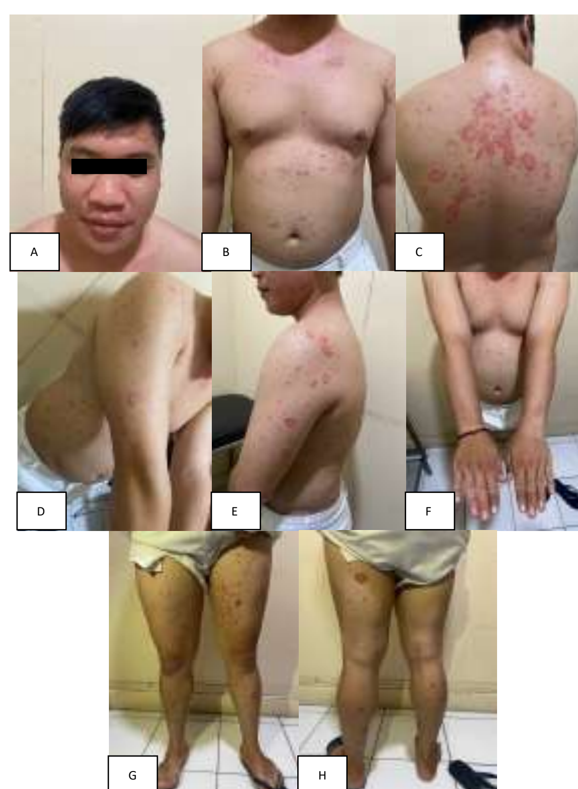

Figure 2. Widening of the lesions

Three months later (October 2023), the patient said that the red spots had decreased and the itching was no longer as severe as before. A throat swab examination was repeated and it was found that there was no growth of pathogens. The patient was not given antibiotics. The patient's topical therapy, systemic therapy with methotrexate 5 mg/week, and cetirizine 1x10 mg were continued. Four months later, the patient said that the red spots had thinned and no new ones had appeared. Itching is only felt occasionally. The patient's PASI score decreased to 4.3 and the patient's DLQI score also decreased to 9. The patient continued to receive topical therapy, methotrexate 5mg/week, and cetirizine 1x10 mg at night. Methotrexate in this patient was continued at a dose of 5 mg/week. The dose was not increased as it demonstrated a good treatment response. This dose is planned to be given long-term while monitoring the patient for signs of toxicity.

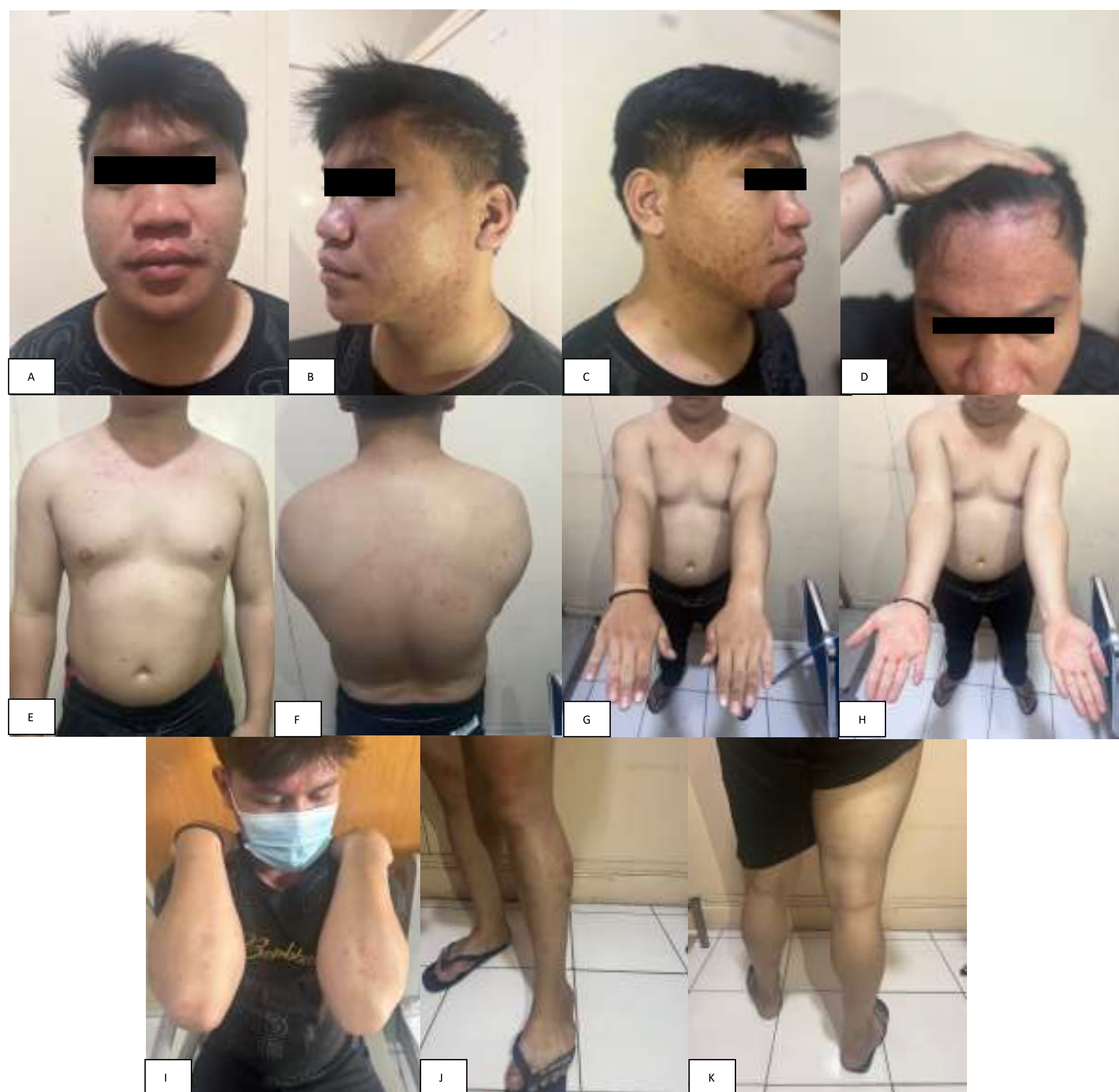

Figure 3. Resolution of the clinical symptoms

The prognosis in this patient is *quo ad vitam bonam*, *quo ad functionam bonam*, and *quo ad sanationam dubia ad bonam*.

DISCUSSION

Psoriasis is a common condition, but the guttate variant is rare. Guttate psoriasis generally affects children and young adults under 40 years of age. This disease accounts for 4% of all clinical types of psoriasis. The prevalence of guttate psoriasis is estimated at 0.6 to 4.8% in the general population.(Carretero et al., 2010; Fernández-Guarino et al., 2016). Guttate psoriasis manifests as an eruption of small papules with a diameter of 0.5-1.5 cm (tear drops) and multiple round, small, scaly plaques, mainly on the trunk and extremities. Spotting spreads centripetally mainly on the upper body, proximal extremities, face, ears and head. In the early stages it is usually accompanied by a little scaling. Psoriasis lesions can also be found in major skin folds, such as the axillae, genitocrural region, and neck. In the folded area, scale is usually found to be minimal or absent, and the lesion appears shiny with well-defined erythema limited to the skin-to-skin contact area. (Carretero et al., 2010; Damayanti et al., 2021; Darod et al., 2023; Fernández-Guarino et al., 2016)

Throat swabs are neither specific nor sensitive for the micro bacteria that cause throat pain. However, confirmation of bacterial growth is needed from the results of a throat swab. (Fogel & Strober, 2021) *Kingella kingae* is a gram-negative, facultative anaerobic bacterium that can produce RTX (repeat-in-toxin) with broad-spectrum cytotoxicity. This toxin facilitates mucosal colonization and maintains the organism in the bloodstream. The clinical symptoms complained of due to the invasion of *Kingella kingae* are a mild increase in body temperature, rhinorrhea, pharyngitis, stomatitis, and diarrhea. There is no therapeutic protocol for treating *Kingella kingae* invasion, so patients can be given empiric therapy using antibiotics that are commonly used to treat other bacterial pathogens. (Gudjonsson & Elder, 2012) *Spinghomonas paucimobilis* is an aerobic Gram-negative bacillus that is a rare cause of upper respiratory tract infections. This bacteria is an opportunistic pathogen and can be found in contact with health services. There is no antibiotic regimen therapy protocol for this bacteria. This bacteria responds well to antibiotics. Antibiotics that can be given are broad-spectrum beta-lactam antibiotics, beta-lactams with beta-lactam inhibitors, cephalosporins, fluoroquinolones, and carbapenems. (Galili et al., 2023; Zhou, 2024). Other bacteria known to trigger psoriasis are *Streptococcus pyogenes*, *Staphylococcus aureus*, and *Helicobacter pylori*. Other bacteria are *Enterococcus faecalis*, *Escherichia coli*, *Pseudomonas aeruginosa*, and *Proteus* although their specific role is not yet known. (Teng et al., 2021)

Colonization of the mouth and throat is usually found in conjunction with dental plaque which causes caries, periodontal disease, or streptococcal pharyngitis. Periodontitis is chronic gingivitis caused by an excessive inflammatory response to microbial colonies in dental plaque. Dental plaque is a multispecies agglomeration in the form of a biofilm. Teeth do not have an epithelial decay mechanism, so bacteria can survive for a long time without needing to pay attention to the epithelial turnover process. In the mouth alone, 25,000 species of bacteria can be found, of which 1,000 form dental biofilms. It is thought that bacterial colonization of the oral cavity can trigger excessive activation of the immune response in the susceptible host, thereby causing permanent inflammatory processes associated with autoimmune disorders. (Earlia et al., 2023).

The diagnosis of guttate psoriasis can be made based on history, physical examination, laboratory and histopathological examination. The majority of psoriasis falls into three main categories, namely chronic plaque, guttate and erythrodermic/pustular. Guttate psoriasis is a self-limiting disease with spontaneous resolution in 6-12 weeks. Guttate psoriasis can also be an initial manifestation of psoriasis or an acute flare of pre-existing chronic plaque psoriasis. A study by Zhou et al. found that 25.3% of patients with guttate psoriasis later developed chronic plaque psoriasis. A study by Galili et al. showed that 38.9% of patients with guttate psoriasis later developed chronic plaque psoriasis. If a patient with guttate psoriasis finds a positive result for group A streptococcus on a throat swab, then this is a prognostic factor in not developing chronic plaque psoriasis. Patients with guttate psoriasis associated with streptococcal infection usually experience involution within 4 weeks of antibiotic therapy. (Tito et al., 2022; Toh et al., 2011).

Therapy is carried out based on the location and extent of the disease. The first step in treatment is to remove the trigger and treat the infection. In mild cases, therapy for guttate psoriasis is not needed, but if there is spread, topical therapy in combination with ultraviolet B phototherapy can be done. In cases where guttate psoriasis develops into chronic plaque psoriasis, the choice of therapy is based on the extent of the disease. Methotrexate is highly effective for chronic plaque psoriasis. Methotrexate has anti-inflammatory, anti-metabolite and antiproliferative effects. Methotrexate was found to be effective at low doses (0.1-0.3 mg/kgBW/week) for the treatment of psoriasis. At this concentration, methotrexate inhibits

lymphocyte proliferation in vitro. Kidney, liver and complete blood function tests should be carried out 2 weeks before therapy and every 3 months thereafter. The therapeutic effect is found within 4-8 weeks.(Damayanti et al., 2021; Yagupsky, 2015) Methotrexate should be discontinued or modified if side effects, intolerance, therapeutic failure, or an insufficient response is observed, and if the cumulative dose has reached the maximum dose. (Zhou & Yao, 2022). Guttate psoriasis usually disappears within 4 weeks after therapy and can disappear on its own in 12-16 weeks without treatment. Recurrence can occur if there are trigger factors. Although psoriasis does not cause death, this disease is chronic and residual. The risk of developing chronic psoriasis within 10 years of acute guttate psoriasis is 33%. (Darod et al., 2023; Falls, 2020; Tito et al., 2022)

CONCLUSION

A case of guttate psoriasis in a 27-year-old man has been reported. This patient failed to respond to topical therapy. Throat examination was done twice, and both had different colonization of bacteria. Periodontitis was found to be the cause of this condition. Atypical bacterial colonization is a bad prognosis factor for guttate psoriasis. Guttate psoriasis in this patient had evolved to become chronic plaque psoriasis, therefore systemic therapy with methotrexate was given.

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