Gac Méd Caracas 2023;131(Supl 2):S185-S191
DOI: 10.47307/GMC.2023.131.s2.14

Severe Norwegian Scabies Infection in Psoriatic Arthritis Patient with Naïve Hepatitis B and Sepsis: A Case Report

Infección Severa de Sarna Noruega en Pacientes con Artritis Psoriásica con Hepatitis B sin Tratamiento Previo y Sepsis: Reporte de un caso

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SUMMARY

Introduction: *Norwegian scabies is an acute form of severe scabies infection seen in immunocompromised patients. Psoriasis arthritis (PsA) is a systemic autoimmune disease involving the synovial tissue and skin. Norwegian scabies with its complication that occurs in PsA patients can be difficult to diagnose and cause mortality if untreated.*

Case presentation: *A 39-year-old woman came to Dr. Soetomo's hospital with complaints of body aches, peeled white scales all over her body, and immobilization for months. Multiple macular erythemas that were covered by thick scales with indistinct borders and multiple ulcers with slough were found. The patient met CASPAR criteria for diagnosing PSA. Sarcoptes scabiei eggs were found on skin scraping. The patient also had naïve hepatitis B and severe sepsis. Low-dose methylprednisolone was given with ivermectin, antibiotic, tenofovir, and regular wound care. The patient responded satisfactorily to the treatment and clinical findings was getting better. The thick crust disappeared, and the patient was able to mobilize.*

Conclusion: *Diagnosing and treating Norwegian scabies in PsA remains challenging, and poor prognostic often follows. Proper and immediate treatment will give a good outcome.*

Keywords: *Norwegian scabies, psoriatic arthritis, sepsis, Naïve hepatitis B.*

RESUMEN

Introducción: *La Sarna Noruega es una forma aguda de sarna grave que se observa en pacientes inmunocomprometidos. La Artritis Psoriásica (PsA) es una enfermedad autoinmune sistémica que afecta el tejido sinovial y la piel. La Sarna Noruega con su complicación que ocurre en pacientes con PsA puede ser difícil de diagnosticar y causar mortalidad si no se trata.*

Presentación del caso: *Una mujer de 39 años acudió al hospital del Dr. Soetomo con quejas de dolores en el cuerpo, escamas blancas descamadas en todo el cuerpo e inmovilización durante meses. Se encontraron múltiples eritemas maculares que estaban cubiertos*

DOI: https://doi.org/10.47307/GMC.2023.131.s2.14

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Recibido: 23 de febrero 2023
Aceptado: 3 de marzo 2023

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por gruesas escamas de bordes indistintos y múltiples úlceras con esfacelos. El paciente cumplía criterios CASPAR para el diagnóstico de PSA. Se encontraron huevos de Sarcoptes scabiei al raspar la piel. El paciente también tenía Hepatitis B Naïve y sepsis grave. Se administró metilprednisolona en dosis bajas con ivermectina, antibiótico, tenofovir y cuidado regular de heridas. El paciente respondió satisfactoriamente al tratamiento y los hallazgos clínicos fueron mejorando. La costra gruesa desapareció y el paciente pudo movilizarse.

Conclusión: *El diagnóstico y el tratamiento de la Sarna Noruega en la APs sigue siendo un desafío y, a menudo, sigue un mal pronóstico. El tratamiento adecuado e inmediato dará un buen resultado.*

Palabras clave: *Sarna Noruega, artritis psoriásica, sepsis, hepatitis B Naïve.*

INTRODUCTION

Norwegian scabies, or hyperkeratotic scabies, is an acute form of severe scabies infection seen in immunocompromised patients. Psoriasis arthritis (PsA) is a systemic autoimmune disease involving the synovial tissue and skin. Patients with PsA tend to develop secondary infections more than healthy people. The immune system of patients with autoimmune diseases will attack the cells in their own bodies, and the immunosuppressant therapy given is a combination factor that makes patients with autoimmune diseases more susceptible to infection (1).

Human scabies is caused by an ectoparasite mite called *Sarcoptes scabiei var. hominis*, which belongs to the order Stigmata. Sarcoptes mites will enter the skin and lay several eggs in the canal and then a few days later nymphs will appear on the surface of the skin. This scabies infection can also be very easily transmitted to individuals around the patient. Scabies has been reported from various parts of the world, and the incidence is high, especially in developing countries. The main factors for the spread of this disease are overcrowding, poor personal hygiene, living in rural areas, and ignoring hygienic principles (2).

Norwegian scabies that occurs in PsA patients leads to sepsis due to secondary infection and death in untreated patients. Therefore, it is very important to carry out diagnostic and therapeutic management as early as possible, especially in patients with impaired immune systems, to avoid the severity of the disease and complications.

CASE PRESENTATION

A 39-year-old woman came to Dr. Soetomo hospital based on a referral from an internal medicine specialist with complaints of body aches and skin peeling all over her body. Initially, the patient complained of itchy legs accompanied by reddish patches, then spread throughout the body. After that, the skin is covered with white scales and peels off. Because the skin peels and the body aches, the patient was immobilized for the past 4 months. As a result, there was a wound on the right lower back. The patient also complains of joint pain in the right and left toes, especially in the morning after waking up. At the previous internal medicine specialist, the patient was previously treated with methylprednisolone tablets 16 mg/24 h for the last 2 weeks. From the social history, the patient lives with her husband at home and has 2 children. Her two children go to an Islamic boarding school and only come home when school is off.

On physical examination, the general condition was weak. Multiple ulcers were found in the sacrum region with a size of 7x5 cm, 3x2 cm, and 1x1 cm, with a dermis base and exudate. Ulcers were also found in the right trochanter region with a size of 10x6 cm, with a muscle base and slough. On the dermatological status of the whole body, there were multiple macular erythemas with indistinct borders and thick scales (Figure 1 a-d).

In laboratory examination, there were reactive HBsAg, leukocytes 32 780/cm^3, procalcitonin 6.39 ng/mL, CRP 27 mg/L, ESR 97 mm/h, ANA test 27.5 units (moderately positive), and negative rheumatoid factor. On x-ray examination, showed inflammatory joint disease in genu dextra. Due to the finding of multiple erythematous macules accompanied by thick scales, Dermatoveneorology colleagues performed a skin-scraping examination and found the formation of *Sarcoptes scabiei* eggs (Figure 2).

There were also found symptoms of infection, namely fever, accompanied by a focus of infection (purulent ulcer in the sacrum region) so the patient was examined for blood and pus

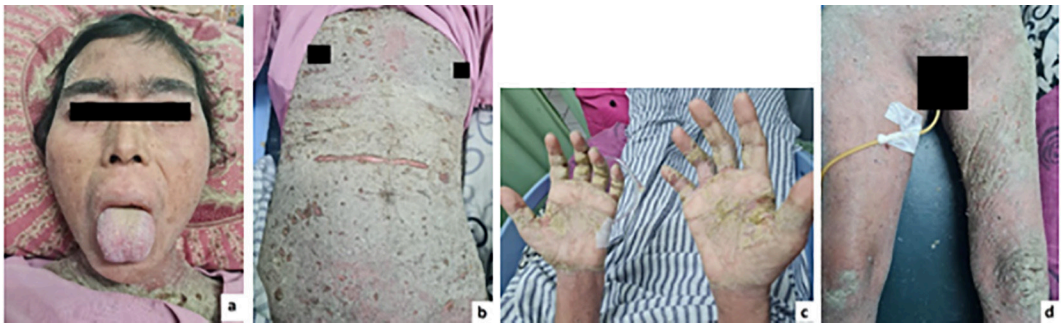

Figure 1 a-d. Clinical findings of multiple macular erythemas and thick scales all over the body, day 0 of treatment. (a: face, b: chest and abdomen, c: acral, d: lower limb).

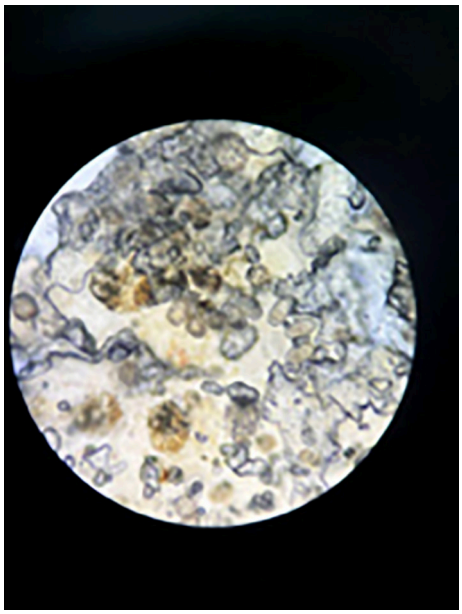

Figure 2. *Sarcoptes scabiei* eggs from skin scraping examination.

culture. Based on blood culture, MRSA was sensitive to linezolid and vancomycin and based on pus culture, ESBL was sensitive to amikacin, ampicillin-sulbactam, cefoperazone sulbactam, imipenem, tetracycline, amoxicillin, clavulanic acid, tigecycline, chloramphenicol, meropenem, and piperacillin. Through history taking, physical examination, and additional examination, the patient was diagnosed with PsA, Norwegian scabies, sepsis caused by infected decubitus ulcer of trochanter region dextra grade IV and sacrum region grade III, and naïve hepatitis B.

The patient was treated with methylprednisolone with an initial dose of 62.5 mg/24 h intravenous, then tapered down every 3 days to 8 mg/12 h orally, then 8 mg/24 h orally and paracetamol tablet 500 mg/8 h orally if in pain. For Norwegian scabies, the patient was initially given topical therapy with 5 % permethrin ointment which was applied to the entire lesion, but the patient complained that the skin was getting more painful and itchy, so finally the patient was given ivermectin tablet 12 mg/24 h given on day 1, 2, 8, 9 and 15 orally, accompanied by cetirizine tablets 10 mg/24 h every morning, CTM tablets 4 mg/24 h every night, sodium fusidate ointment 2 times a day, and wounds treatment regularly. The patient's family was also immediately directed to seek treatment from the community health center to prevent scabies from spreading. Previously the patient was given an empirical antibiotic which is ceftriaxone injection 1 g/12 h intravenously and due to the finding of MRSA in blood culture and ESBL in pus culture, the antibiotic was switched to vancomycin drip 1 g/12 h intravenously and cefoperazone sulbactam injection 2 g/12 h intravenously for 7 days. For treatment of naïve hepatitis B, tenofovir tablets were given 300 mg/24 h orally because the patient was receiving oral methylprednisolone therapy.

On the 7th day of treatment, the scales and peeling skin all over the body have reduced. Itchy and pain in the skin have also been reduced. Pus in the decubitus ulcer is still present but has decreased. Because there is still weakness

and pus in the decubitus ulcer, vancomycin drip of 1 g/12 h intravenously and cefoperazone sulbactam injection of 2 g/12 h intravenously were continued until day 10. After the 10th day of treatment, the clinical evaluation of the patient was found to be improving, so the patient was allowed to go home and undergo treatment in the outpatient clinic. When the patient came to the rheumatology outpatient polyclinic a week later, she found that complaints of pain were much reduced. The patient was able to do activities at home, the scales and erythema on the patient's skin were decreased, and the pus in the decubitus ulcer was also reduced. Patients received therapy with methylprednisolone 8 mg/24 h orally, cetirizine 10 mg/24 h orally, tenofovir tablets 300 mg/24 h orally, and wound treatment regularly for decubitus ulcers (Figure 3 a-d).

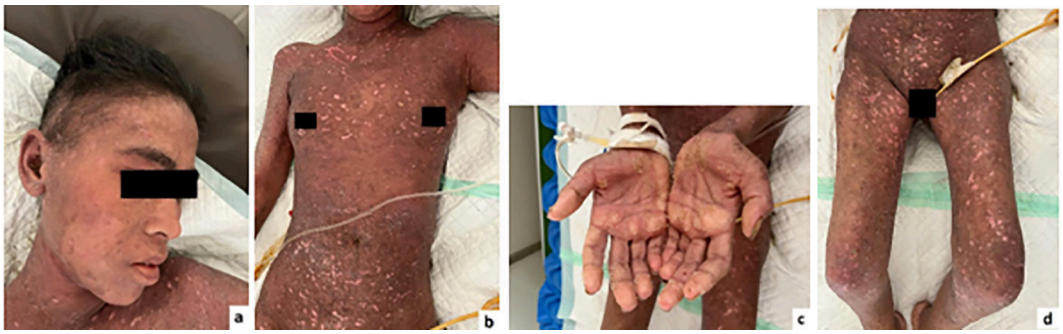

Figure 3 a-d. Clinical findings where erythema and thick scales have reduced, day 10 of treatment. (a: face, b: chest and abdomen, c: acral, d: lower limb).

DISCUSSION

PsA is a systemic autoimmune disease that can manifest in joints and skin (1). The diagnosis of PsA can be made using the CASPAR (ClASsification criteria for Psoriatic ARthritis) criteria, if there are 3 points out of the following criteria: present psoriasis (2 points; for all other criteria 1 point), history of psoriasis, family history of psoriasis, dactylitis, juxta-articular new bone formation as evidenced by radiological examination, negative rheumatoid factor, and nail dystrophy (3). Symptoms of PsA that are often found are pain, swelling, and stiffness in the joints. The severity of PsA symptoms varies from mild to severe irreversible inflammatory joint damage (4). On physical examination, inflammation of the joints can be found. The joints most commonly affected are the knees, ankles, and the joints of fingers, and toes. Diagnosis of psoriasis on the skin is more frequently found clinically because punch biopsy is rarely done. Clinical findings often found in psoriasis patients is the presence of well-defined, erythematous, thick scales with a diameter of > 0.5 cm, either as a single lesion or generalized throughout the body (5). The manifestations of psoriatic arthritis may precede the skin symptoms or occur together (6).

In this patient, the diagnosis of psoriatic arthritis can be made because it meets 3 points from the CASPAR criteria, namely the presence of current psoriasis and negative rheumatoid factor. Although a punch biopsy was not performed in this patient, the diagnosis of psoriasis can be made clinically, which is the presence of well-defined and thick scales that are generalized throughout the body, accompanied by erythematous skin underneath. Symptoms that are often found in PsA patients can also be found in this patient, namely pain in the toe joints.

Norwegian scabies is a rare form of massive manifestation caused by the infection of *Sarcoptes scabiei var hominis* due to inadequate host

response to mites. In common scabies, the number of parasites that attack the epidermis is relatively small. In Norwegian scabies, millions of parasites invade the epidermis and induce hyperplastic changes. Norwegian scabies is frequently found in immunocompromised patients, such as in patients with immunodeficiency syndromes or patients with transplants, patients with autoimmune, patients with infection (8), immobilized patients, and patients with paresis or severe arthropathy (7). With the increasing use of immunosuppressive therapy, the diagnosis of Norwegian scabies is more common (9). Cases have been reported on previous systemic corticosteroids (10) and tocilizumab therapy (11).

In this case, the patient has an autoimmune disease, which is PsA, where the patient's immune response is impaired. There was also a history of prolonged immobilization and previous therapy with oral corticosteroids which makes the patient susceptible to Norwegian scabies infection. Hepatitis B naïve in this patient also reduced immunity and make the patient susceptible to Norwegian scabies infection.

Clinically, Norwegian scabies is characterized by extensive hyperkeratosis and crustae, especially in the acral area. It can also cause severe itching and form a secondary infection that causes septicemia and mortality in untreated patients (12). Norwegian scabies can develop into erythroderma. Diagnosis can be complicated when this occurs in an autoimmune patient with the rash, thus skin scraping examination should be performed in autoimmune patients with hyperkeratosis and macular erythema, especially in patients with complaints of itching, to rule out the diagnosis of Norwegian scabies. When the diagnosis of Norwegian scabies is made, the patient must immediately undergo adequate therapy and isolation, because the disease is highly contagious (13).

This patient had macular erythema all over the body, accompanied by thick scales. This thick scale is formed from the process of hyperkeratosis. Skin scraping examination was performed on this patient and we found the formation of *Sarcoptes scabiei* eggs. When the diagnosis of Norwegian scabies was made, the patient was immediately treated in an isolation room. The patient's family at home was also immediately directed to check themselves at the community health center to break the chain of scabies infection transmission.

Therapy in PsA patients can be complicated in several circumstances, in this case with Norwegian scabies infection, sepsis, and comorbid hepatitis B infection. According to the American College of Rheumatology, non-pharmacological and pharmacological therapies can be given to PsA patients. Non-pharmacological therapies include physical therapy, occupational therapy, smoking cessation, weight loss, and exercise. Pharmacological therapies include oral small molecule, biologic tumor necrosis factor inhibitors (TNFi), biologic interleukin-17 inhibitors (IL-17i), biologic IL-12/23i, CTLA4-immunoglobulin, and JAK inhibitors. Symptomatic therapy includes Non-steroidal anti-inflammatory drugs (NSAID), systemic glucocorticoids, and glucocorticoid injections. Methotrexate (MTX) is recommended over NSAIDs in treatment-naive patients with active arthritis. NSAIDs can be used instead of MTX if there are contraindications in patients without severe psoriasis or severe PsA and in those at risk of liver toxicity (14) However, biological therapies such as TNFi, IL17i, and IL23i are contraindicated in patients with chronic infectious diseases, such as hepatitis B, HIV, and tuberculosis, because these patients are already immunocompromised. MTX therapy is also contraindicated in patients with chronic hepatitis B infection because it can cause further liver damage. In addition, cyclosporine therapy is also contraindicated in patients with immunocompromised states and active chronic infectious diseases, such as hepatitis B (14).

This patient was given therapy for PsA, but due to the presence of Norwegian scabies infection and naïve hepatitis B which indicates the patient is immunocompromised, the only therapy given was low-dose methylprednisolone. This is because the administration of cyclosporine, MTX, and biologic therapy is contraindicated in immunocompromised patients. Patients are also given paracetamol tablets 500 mg / 8 h when the patient feels pain and physical therapy with gradual mobilization exercises.

Treatment of Norwegian scabies was first carried out by administering a scabicidal agent, namely 5 % topical permethrin. It has been

previously reported in two cases of Norwegian scabies in similar autoimmune patients in Iran that topical use of 5 % permethrin for 2 weeks gave good results (12). If topical scabicide agents fail, oral ivermectin can be used for the treatment of Norwegian scabies (15). The use of ivermectin for Norwegian scabies has been shown to be safe and effective in a single oral dose (16). Ivermectin is used for the treatment of crusted scabies in doses ranging from 0.1 to 0.4 mg/kg. However, the general validated dose is 0.2 mg/kg (17). Ivermectin may be the drug of choice for scabies unresponsive to conventional topical therapy, which is common in patients with immunodeficiency syndromes or epidemic outbreaks.

Initially, this patient was treated with 5 % permethrin topically as a scabicidal agent, but the patient complained of worsening pain and itch. So we replaced it with oral ivermectin 12 mg / 24 h. After that, the thick scale began to disappear and the itch and pain felt by the patient began to decrease.

Generally, PsA is a disease with a mild condition. With proper management, joint stiffness, and pain can be resolved. However, in certain circumstances where PsA is accompanied by a secondary infection causing sepsis, it can be life-threatening. On the other hand, Norwegian scabies manifestations can occur in an atypical pattern, so it can cause delays in diagnosis and have a poor prognosis (18).

This patient had PsA manifestations accompanied by Norwegian scabies, naïve hepatitis B, decubitus ulcers, and sepsis. Due to the occurrence of PsA in this patient accompanied by other conditions that make the patient increasingly immunocompromised, this can lead to life-threatening for the patient and a poor prognosis. However, proper management and administration as early as possible prevent the patient from morbidity and mortality.

CONCLUSION

We reported a 39-year-old woman with complaints of body aches, peeled white scales all over her body, and immobilize for months. Multiple macular erythemas that were covered by thick scales with indistinct borders and multiple ulcers with slough were found. The patient met CASPAR criteria for diagnosing PsA. *Sarcoptes scabiei* eggs were found on skin scraping. The patient met CASPAR criteria for diagnosing PsA. The patient also had naïve hepatitis B and severe sepsis. Low-dose methylprednisolone was given with ivermectin, antibiotic, tenofovir, and regular wound care. The patient responded satisfactorily to the treatment and clinical findings were getting better. The thick crust disappeared, and the patient was able to mobilize. Diagnosis can be complicated when Norwegian scabies occurs in an autoimmune patient with the rash, thus skin scraping examination should be performed to rule out Norwegian scabies. Poor prognostic often follows Norwegian scabies in PsA, and treatment must be carried out with caution considering the many contraindications in autoimmune patients. Proper and immediate treatment will give a good outcome.

Acknowledgments

The authors would like to express gratitude to Dr. Soetomo Teaching Hospital. The author receives no funding for arranging this case report.

Conflicts of Interest

The authors declare no conflict of interest.

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