

NORWEGIAN SCABIES – RARE CAUSE OF ERYTHRODERMA - CASE REPORT -

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Abstract: Scabies is a public health problem that can affect patients of any socio-economic background. A particular form of scabies is the Norwegian scabies, which appears more frequently in patients who are immunocompromised, malnourished or HIV-positive. We report a case of 79-year-old patient admitted to our Dermatology Department on the grounds of a generalized erythematous-squamous rash, intensely pruritic and with infected erosive-ulcerative areas in the right buttock. During hospitalization, the rash became erythrodermic with very abundant, sticky, greasy, dirty-looking scales, and demonstrated a rapid reoccurrence trend. The case was complicated by severe a toxic-septic status and electrolyte disturbances. By collating the clinical, parasitological and histopathological aspects, we established the Norwegian scabies diagnosis. The therapy included: systemic antibiotherapy, hydroelectrolytic rebalance and local scabicide treatment, which then led to the healing of the disease. In conclusion, this article argues that the Norwegian scabies may pose problems of differential diagnosis with specific treatment delay. This can lead to a worsening of the rash and the appearance of some complications (erythroderma and/or toxic-septic status). In addition, undiagnosed scabies, especially in institutionalized patients, can be a source of infectious outbreaks in the surrounding environment.

Cuvinte cheie: scabia norvegiană, *Sarcoptes scabiei*

Rezumat: Scabia este o problemă de sănătate publică, ce poate afecta pacienți cu orice statut socio-economic. O formă particulară de scabie este scabia norvegiană ce apare mai frecvent la pacienții imunocompromiși, malnutriți, HIV pozitivi. Pacient de 79 de ani se internează în Clinica de Dermatologie Sibiu pentru apariția unei erupții eritemato-scuamoase generalizată, intens pruriginoasă și zone eroziv-ulcerative fesier drept. În cursul internării erupția a devenit eritrodermică, cu scuamocruste aderente, grăsoase, murdare, cu tendință de refacere rapidă. În evoluție cazul s-a complicat cu stare toxico-septică cu *Stafilococ aureu hemolitic MRSA* și dezechilibre hidro-electrolitice. Prin coroborarea aspectului clinic, parazitologic și histopatologic am stabilit diagnosticul de scabie norvegiană. Schema terapeutică a fost complexă: antibioterapie sistemică, reechilibrare hidro-electrolitică, terapie topică scabicidă, cu vindecarea afecțiunii. În concluzie, scabia norvegiană poate să pună probleme de diagnostic diferențial cu întârzierea tratamentului specific scabicid ce poate duce la agravarea erupției cu apariția unor complicații (eritrodermizare și/sau stare toxico-septică). De asemenea, scabia nediagnosticată la timp, în special la pacienții instituționalizați, poate fi sursa unor focare infecțioase pentru anturaj.

INTRODUCTION

Scabies is a public health problem that can affect patients of any socio-economic status. Subdiagnosis, delayed treatment and poor health education contribute to an increased prevalence of this disease.

A particular form of scabies is the Norwegian scabies, which appears more frequently in immunocompromised patients, malnourished and HIV-positive. The term Norwegian scabies was coined in 1848 to describe a particular form of scabies in a patient with Hansen disease (leprosy).

The predominant route of transmission is through direct contact. The Norwegian scabies is an uncommon form of scabies, but highly contagious, which is characterized by a large number of *Sarcoptes scabiei* in the stratum corneum of the epidermis (1).

In response, the stratum corneum thickens and forms warty crusts. In most cases, it is associated with certain underlying diseases and appears usually in

immunocompromised patients (2) who may be prone to bacterial infections (3). In addition, the host's response can be modified in the case of immunosuppressive therapy.

CLINICAL CASE

Patient, 79 years old is admitted in Dermatology Department for a generalized erythematous-squamous rash, intensely pruritic (figure no. 1 a, b) and infected erosive-ulcerative areas in the right buttock; event started a few weeks in advance.

The patient presented poor nutritional status, major lower limb crenal edema, disseminated erythematous-squamous eruption and ulcerations in buttock areas. During hospitalization, the rash became erythrodermic, erythematous-squamo-infiltrative with very abundant, sticky, greasy, dirty looking scales, with a rapid reoccurrence trend, most commonly localized in extension areas.

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Figure no. 1 a, b. Clinical aspect upon admission



In its evolution, the case was complicated by a severe toxic-septic status (fever 39.1°C, blood cultures positive for MRSA), the starting point was right gluteal ulceration overgrowth, which called for supported antibiotherapy. Laboratory tests showed leukocytosis (L 16560/mm³), anemia (Hb 9.7 g/dl, Ht 30,6%), inflammatory syndrome (ESR 30 mm/h, CRP 62.5 U/L), hypoproteinemia (PT 5g/dl) and electrolyte disturbances (K 2.81 mEq/l, Na 139.6 mEq/l).

The differential diagnosis was made with all the erythroderma states, including drug erythroderma (denied administration of any medications prior to onset of the rash), generalized or erythrodermic eczema or psoriasis, seborrheic dermatitis (in our case a very severe generalized rash), Darier disease, histiocytosis, pityriasis rubra pilaris or erythroderma of hemathologic causes (leukemia, lymphoma). The myco-parasitological examination sampled from the scales revealed the presence of the parasite *Sarcoptes scabiei*, and the histopathological examination (figure no. 2) confirmed the presence of remnants of *Sarcoptes scabiei* in the stratum corneum, thus confirming the diagnosis of Norwegian scabies.

Figure no. 2. The histopathological exam confirms the diagnosis of Norwegian scabies

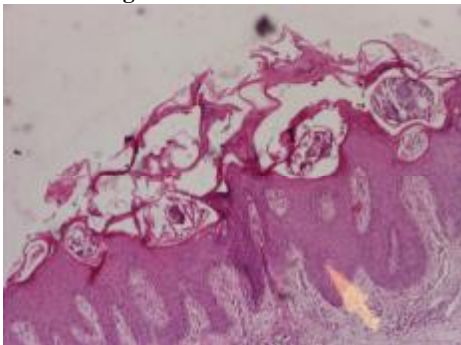


Figure no. 3 a, b. Clinical aspect at discharge



DISCUSSIONS

The incidence of scabies is increasing worldwide. Due to the highly contagious nature of Norwegian scabies and the frequent appearance in elderly and/or immunocompromised (especially in HIV-positive patients), it is important to establish an early diagnosis of this disease. Clinical lesions are crusted, hyperkeratotic, initially localized in extension areas, palms and soles, with subsequent extension to more generalized forms. The atypical clinical aspect of Norwegian scabies (psoriasis-like or eczema-like) can be difficult to diagnose. From an immunological point of view, one can record high values of serum levels of IgE and IgG; however, a secondary immune response does not cause immunity. Genetic predisposition for susceptibility or resistance to an infection with *Sarcoptes scabiei* in humans is thought to be linked to increased IgE (BMI response by Th 2 in severe disease) and a predominance of interferon γ (BMI response by Th 1). It has been shown that eosinophils, mast cells and basophils are responsible for Th 2 response.(3) Biopsy sections from the lesions have indicated an increased number of lymphocytes and eosinophils infiltration in the dermis (1), in conjunction with eosinophilia and increased levels of IgE in the blood. In classical forms of scabies, the presence of lymphocytic infiltrates in the skin, mainly with CD4, has been demonstrated. In Norwegian scabies, the predominance of CD8 lymphocytes was found. In our case, the diagnosis has been established by corroborating the clinical aspect with the evidence of the remnants of *Sarcoptes scabiei* in scales (parasitological exam) and in the histopathology sample from skin biopsy. The emergence of this form of scabies was favoured by the patient's immunosuppressed status (elderly patient with protein-caloric malnutrition, neglected).

The severity of our case lies in the complication of Norwegian scabies with a toxic-septic state with MRSA and erythroderma, which led to the exclusion of other causes of erythroderma. The literature refers to infections with *Staphylococcus aureus* as a complication to Norwegian scabies, which can cause increased morbidity and mortality due to the disease.(4) The complication with erythroderma and MRSA sepsis starting at the skin level required a complex therapeutic scheme (hydro-electrolites rebalancing, sustained antibiotics, human albumin). After the diagnosis, the classical therapy with benzyl benzoate allowed healing.

Due to the high infectivity of Norwegian scabies, the therapy requires repeated topical applications of scabicides or simultaneous treatment with a topical agent, such as permethrin and sometimes oral treatment with ivermectin. There have been reports of treatment failure, including permethrin and lindane. Development of a vaccine targeting the enzyme glutathione S-

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transferase of *Sarcoptes scabiei* is a potential promising option.(5)

Even when treatment is effective, scabies can be complicated by an allergic dermatitis (mites can cause eczematous symptoms due to cross-reactivity between antigens). In a study of 25 patients with scabies, skin prick test to house dust mites were positive and IgE levels were markedly elevated from patients with scabies.(6)

Outbreaks of scabies in community institutions can be of large proportions. Norwegian scabies is highly contagious and can be placed in the category of nosocomial infections. A study published by the Journal of the German Society of Dermatology that examined a group of 500 people exposed to infection with *Sarcoptes scabiei* (based on an outbreak of scabies which occurred in a workshop in northern Bavaria) allowed the development of a multilateral strategy for the control of scabies. Their concept of eliminating scabies was successful and included: the formation and training of a management team, the registration of all exposed patients, the simultaneous clinical examination of all contacts, synchronizing the current treatment, decontamination and the establishment of quarantine measures, follow-up investigations and the repetition of the treatment regimen. The conclusion of the study was that the management of outbreaks of scabies in large institutions requires excellent communication skills and a high degree of motivation and perseverance.(7)

CONCLUSIONS

Norwegian scabies, as a particular form of scabies, may pose problems of differential diagnosis, with specific scabicides treatment delays followed by a worsening of the rash. On the other hand, undiagnosed scabies may cause infections in people in the surrounding environment, posing a particular threat of transmission to institutionalized or hospitalized persons, including the medical personnel. In addition, the more enduring the infection, the more effective past treatments are in changing the appearance of the eruption. It is necessary to confirm the diagnosis conducting both direct parasitological examination and skin biopsy with histological evidence of the parasite, like in our case.

It is worth noting that parasitic etiology, scabies, especially in the particular form of crusted scabies, must be included in the panel of investigation of the etiology of erythroderma. In addition, one of the most common possible complications is bacterial infection, particularly with staphylococcus, as demonstrated in our case. Infections with nosocomial MRSA increase the severity and the risk of progression to a toxic-septic state. This was the particularity of our case.

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