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Case Report

Neonatal Scabies Associated with Severe Thrombocytopenia: A Case Report and Literature Review

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Abstract

Background: Scabies is a common parasitic skin infestation in children but is rarely reported during the neonatal period. Its clinical presentation in neonates may be atypical, potentially delaying diagnosis. Hematological abnormalities are not generally considered part of the routine diagnostic assessment of scabies.

Case presentation: A 22-day-old term female neonate was admitted to the Pediatric Emergency Department because of a widespread skin rash that had been present for approximately one week and increasing irritability during the previous 24 hours. She was afebrile, breastfeeding normally, and showed appropriate weight gain. Physical examination revealed widespread erythematous papules, crusted and eroded lesions, and linear track-like lesions involving the hands and face. A family history of scabies was subsequently identified. Dermatological assessment supported the clinical diagnosis of scabies, although the mite was not identified. Because of the extensive and prolonged skin involvement in a neonate, laboratory investigations were performed and unexpectedly revealed severe thrombocytopenia, with a platelet count of 28,000/mm³, confirmed by the hospital central laboratory. Inflammatory markers and renal and liver function tests were unremarkable. The infant was hospitalized for treatment of scabies and hematological monitoring. Following treatment of the infestation, the skin lesions resolved and the platelet count returned to normal.

Discussion: Thrombocytopenia associated with neonatal scabies has been described in a limited number of previous reports. The recurrence of a potentially severe hematological abnormality in several independently reported cases is noteworthy, particularly given the rarity of scabies in the neonatal period. Experimental studies have also demonstrated that *Sarcoptes scabiei* products can modulate cytokine production and endothelial adhesion molecule expression, although a direct mechanism linking infestation to thrombocytopenia has not been established.

Conclusion: Severe thrombocytopenia may represent an uncommon and clinically silent complication associated with neonatal scabies. Considering neonatal immunological immaturity, the potential severity of undetected thrombocytopenia, and the simplicity and limited invasiveness of a complete blood count, we propose that a complete blood count should be routinely performed in neonates diagnosed with scabies, even in the absence of overt systemic manifestations.

Keywords: *Scabies; Sarcoptes Scabiei; Neonate; Newborn, Neonatal Scabies; Thrombocytopenia; Platelet; Eosinophilia; Hematology; Inflammation, Cytokine*

Introduction

Scabies is a common contagious parasitic skin infestation caused by *Sarcoptes scabiei* and can affect individuals of all ages. However, scabies during the neonatal period is uncommon and may present with atypical or extensive cutaneous manifestations, making early recognition challenging [1,2]. In neonates, the clinical features may overlap with other dermatological and infectious conditions, potentially leading to delayed diagnosis. Although systemic complications are uncommon, associated hematological abnormalities have been rarely described [3,4].

We report a case of neonatal scabies associated with severe thrombocytopenia in an otherwise clinically well neonate, highlighting the importance of considering hematological evaluation in neonates with extensive scabies [5,6].

Case Presentation

A 22-day-old newborn, weighing 3,660 g, was admitted to the Pediatric Emergency Department in October 2023 because of a widespread skin rash and irritability. The skin lesions had been present for approximately one week without fever, and the infant had become increasingly irritable over the previous 24 hours.

The newborn was exclusively breastfed and had been born at term by cesarean delivery, with a birth weight of 3,050 g. She was the second child of a local family. His father worked in frequent contact with the public.

As an infectious disease was suspected, a detailed medical history was obtained. This revealed that an aunt had been diagnosed with scabies ten days earlier. The father, despite frequent contact with the public, had no skin lesions or other symptoms suggestive of scabies.

On physical examination, the skin lesions were widespread and also involved the hands and face. They consisted of pink-to-erythematous lesions with reddish borders, some of which were eroded, together with erythematous papules, crusts, and unusual linear, track-like lesions suggestive of burrows. Figure 1

A dermatological consultation was requested. The hospital dermatologist confirmed the clinical suspicion of scabies, the presence of several cunicoli, although the mite could not be isolated.

When the patient returned to the Pediatric Emergency Department after the dermatological consultation, given the extensive skin involvement, the presence of erosions, the prolonged course of the lesions, and the neonatal age of the patient, we decided to perform blood tests to investigate possible systemic involvement.

A point-of-care complete blood count was performed using Microsemi® CRP Horiba unexpectedly it revealed severe thrombocytopenia, with a platelet count of 30,000/mm³, while serum C-reactive protein (CRP) was negative. A complete blood count was therefore repeated at the hospital's central laboratory, confirming severe thrombocytopenia.

Laboratory investigations showed the following results: white blood cell count 9,120/mm³, absolute neutrophil count 1,840/mm³, absolute eosinophil count 760/mm³ (8.6%), hemoglobin 10.8 g/dL, and platelet count 28,000/mm³. CRP was 4.0 mg/L (normal value < 5.0 mg/L). Renal and liver function tests were within normal limits.

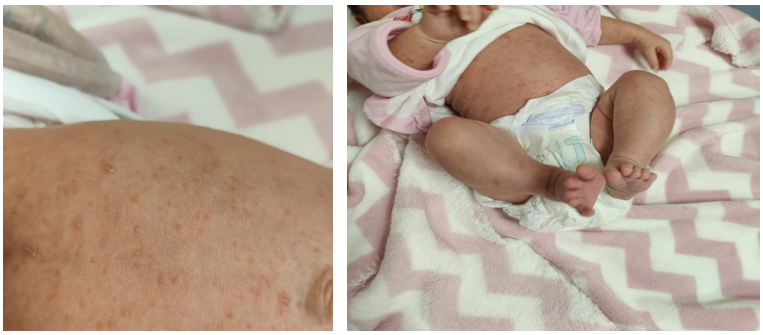

Figure 1

The patient was hospitalized for treatment of scabies and for clinical and hematological monitoring of the severe thrombocytopenia. All family members were simultaneously treated for scabies in order to prevent reinfestation.

Following treatment of the infestation, the skin lesions progressively resolved and the platelet count returned to normal. Thus, resolution of scabies was accompanied by resolution of thrombocytopenia.

Discussion

Neonatal scabies represents an uncommon clinical condition and may be diagnostically challenging because its manifestations can differ substantially from those observed in older children and adults. The present case is particularly noteworthy because severe thrombocytopenia was detected in an otherwise clinically well neonate with extensive scabies.

The infant was afebrile, breastfed normally, showed appropriate weight gain, and had no overt clinical evidence of systemic illness. Inflammatory markers and renal and liver function tests were unremarkable. Nevertheless, his platelet count was markedly reduced to 28,000/mm³. The thrombocytopenia was initially identified by point-of-care testing and subsequently confirmed by the hospital central laboratory.

In 2023, when the patient came to our attention, we identified only one previously published case of thrombocytopenia associated with scabies in a neonate (1). This case, published in 2010 by Manerbio Pediatric Department, involved a 30-day-old infant who had developed scabies several days earlier (tab 1). We were able to identify this report with the assistance of a Colleague specialist in Preventive medicine at the Immuno-transfusional Service of San Paolo Hospital in Bari. The clinical response to topical permethrin and subsequent normalization of the platelet count supported the diagnosis of scabies [1].

In 2015, DeLeon et al. reported a 25-day-old male neonate presenting with a diffuse vesicular eruption and thrombocytopenia. The case emphasized the diagnostic difficulty of neonatal scabies and the importance of considering the infestation in the differential diagnosis of diffuse neonatal eruptions [2].

More recently, another infant with scabies-associated thrombocytopenia was reported in Italy. In that case, the complete blood count demonstrated thrombocytopenia together with anemia and eosinophilia, and the hematological abnormalities initially prompted consideration of alternative diagnoses [3].

Taken together with the present observation, these reports suggest a recurring association between neonatal or early-infantile scabies and thrombocytopenia. The available number of cases remains too small to establish incidence or causality. Nevertheless, the small absolute number should be interpreted in the context of the rarity of scabies during the neonatal period. Repeated observation of the same potentially severe hematological abnormality in independently reported cases therefore represents a clinically relevant signal.

The temporal course in the present case is also of interest. Severe thrombocytopenia was documented during active infestation, while the platelet count subsequently normalized following treatment and clinical resolution of scabies. A similar temporal relationship between successful treatment and platelet normalization was reported in the 2010 case. This temporal association does not establish causality but strengthens the hypothesis that the hematological abnormality may be related to the infestation or to the host response to it.

Table 1

	Age (days)	Duration of illness (days)	Treatment	Platelet	EOS	WBC
S. Guerci et al 2010	30	ND	permetrine	44000	1380 (12%)	11500
D De Leon et al 2015	25	14	permetrine	67000	nd	nd
G La Malfa 2024	30	21	permetrine	48500	704 (7,7%)	9150
L Antonazzo et al	22	7	permetrine	28000	760 (8,3%)	9120

The mechanism underlying thrombocytopenia in this setting remains unknown. However, experimental studies indicate that the interaction between *S. scabiei* and the host is immunologically complex and is not limited to a simple local cutaneous response.

Arlian et al. demonstrated that *S. scabiei* extracts modulate cytokine expression by human peripheral blood mononuclear cells and dendritic cells. Exposure of peripheral blood mononuclear cells to mite extract increased secretion of several inflammatory mediators, including IL-1β, IL-6, IL-8, and TNF-α, whereas different modulatory effects were observed in dendritic cells [4].

Experimental studies on human dermal microvascular endothelial cells have also demonstrated that scabies mite extracts can downregulate TNF-α-induced expression of vascular cell adhesion molecule-1 (VCAM-1) and modify cytokine and chemokine secretion [5]. These observations provide evidence that *S. scabiei* products can substantially modulate host inflammatory and endothelial responses. However, no direct mechanistic link between these effects and thrombocytopenia has yet been demonstrated.

Furthermore, experimental studies suggest that *Sarcoptes scabiei* and its products can modulate host inflammatory responses. Interactions involving endothelial adhesion molecules such as VCAM-1 and the modulation of cytokine pathways, monocytes, dendritic cells, and fibroblasts have been described (5,6). Although these findings do not provide a direct mechanism for thrombocytopenia, they demonstrate that the biological interaction between the parasite and the host immune system is complex and may extend beyond a purely local cutaneous response.

Another potentially relevant finding is eosinophilia. In the present patient, the absolute eosinophil count was 760/mm³ (8.6%). A significant increase in eosinophils was also reported in the case from the Children's Hospital in Palermo. Whether eosinophilia is simply part of the expected immune response to parasitic infestation or is associated with the hematological abnormalities observed in these patients remains to be clarified.

Under ordinary circumstances, uncomplicated scabies in an otherwise well infant can generally be treated outside the hospital. In our patient, however, hospitalization was required because of the severe thrombocytopenia and the need for hematological monitoring. Had laboratory investigations not been performed, this clinically silent but potentially significant abnormality would have remained undetected.

This point has practical implications. A complete blood count is a simple, widely available, inexpensive, and relatively minimally invasive investigation. In neonates with scabies, the potential benefit of identifying a severe and otherwise clinically silent hematological abnormality appears to outweigh the limited burden associated with blood sampling.

The decision to perform a complete blood count should therefore not necessarily depend on the presence of fever, impaired general condition, or other overt signs of systemic disease. Indeed, our patient was clinically well apart from the skin lesions and irritability, yet had severe thrombocytopenia.

The recurrence of thrombocytopenia in the limited number of neonatal cases reported to date, together with the particular vulnerability of this age group and the simplicity of hematological screening, supports a more cautious diagnostic approach to neonatal scabies.

Conclusion

Neonatal scabies is rare and may present with atypical and extensive cutaneous manifestations. Although generally regarded as a skin-limited infestation, accumulating case reports suggest that clinically relevant hematological abnormalities, particularly thrombocytopenia, may accompany the disease.

In our patient, severe thrombocytopenia was clinically silent and was detected only because a complete blood count was performed as part of the evaluation for possible systemic involvement. The platelet count subsequently normalized following treatment and resolution of the infestation.

Although four reported cases are insufficient to establish a causal relationship between scabies and thrombocytopenia, their significance should be considered in the context of the rarity of neonatal scabies. The recurrence of the same potentially severe hematological abnormality in several independently reported cases represents a clinically relevant safety signal that should not be overlooked.

Considering the immunological immaturity and particular vulnerability of neonates, the potential severity of undetected thrombocytopenia, and the simplicity, availability, and relatively low invasiveness of a complete blood count, we believe that a complete blood count should be routinely performed in neonates diagnosed with scabies, even in the absence of clinical signs of systemic involvement.

We therefore propose that the diagnostic approach to neonatal scabies should be reconsidered to include routine hematological assessment. Further collection and reporting of neonatal cases will be essential to determine the true frequency, pathophysiological mechanisms, and clinical significance of thrombocytopenia associated with *Sarcoptes scabiei* infestation.

Ethics Statement

This report describes a single clinical case and did not involve any experimental intervention or modification of the patient's standard clinical management. All diagnostic and therapeutic procedures were performed as part of routine clinical care.

Parental Consent and Patient Privacy

The patient's parents provided verbal consent for clinical photographs of the skin lesions to be taken. The photographs were obtained in a manner designed to preserve the patient's anonymity; the infant's face was not included, and no identifying features are visible in the images.

Conflict of Interest

The authors declare that they have no conflicts of interest relevant to this article.

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Author Contributions

L A , AR F c o n t r i b u t e d t o conception of the case report, literature review, and drafting of the manuscript and critically reviewed the manuscript.

LA, GL, AR F and T DN contributed to the clinical management of the patient.

LA and GL contributed to the dermatological assessment and diagnosis and critically reviewed the manuscript.

All authors reviewed and approved the final version of the manuscript and agree to be accountable for the work.

Data Availability Statement

All relevant clinical data supporting the findings of this case report are included in the article. Additional de-identified information may be made available by the corresponding author upon reasonable request, subject to applicable ethical and privacy restrictions.

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