A Case of Strongyloidiasis Mimicking a Drug Hypersensitivity Reaction to Imatinib

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Strongyloidiasis, a helminth infection affecting approximately 614 million people annually, mainly in tropical and subtropical regions, often presents with mild gastrointestinal, respiratory, or cutaneous symptoms that may mimic drug reactions [1]. Presentations range from asymptomatic in over 60% of chronic cases to potentially fatal disseminated syndromes, with immune alterations leading to severe systemic secondary bacterial infections and a reported mortality rate of up to 62% [2,3].

This case report aims to raise awareness of strongyloidiasis as a differential diagnosis in suspected drug-induced cutaneous reactions and emphasises the need for systematic allergy assessment before discontinuing critical treatments such as imatinib.

We present the case of a 58-year-old man from the Philippines with a gastrointestinal stromal tumor (GIST). He was referred for evaluation of a possible reaction to imatinib, a tyrosine kinase inhibitor (TKI) initiated on January 9, 2023. The patient gave his consent for the publication of this case.

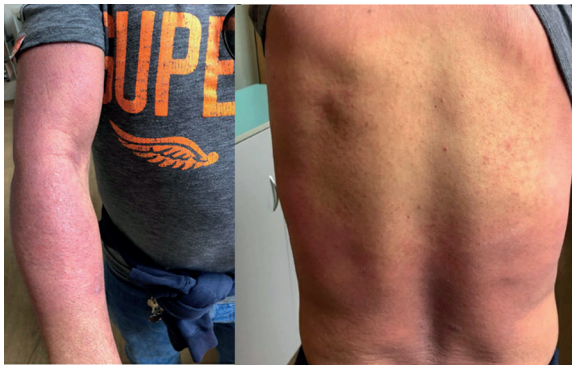

Figure. Rash on the limbs and back.

Seventeen weeks into imatinib treatment, the patient developed a nonspecific rash on his torso that was eczematous in appearance and not classically morbilliform (Figure) and did not align with any known drug reaction category [4]. Over time, the rash became hyperpigmented and lichenified with scratch marks. No pyrexia, lymphadenopathy, mucous membrane involvement, or abdominal and respiratory symptoms were recorded. He had no atopic or other past medical history, was not receiving any other medication, including over-the-counter drugs, and had not traveled in the previous year. Upon review, blood tests revealed marked eosinophilia (2.2×10^9/L), elevated total IgE (1982 kU/L), and raised ALT (93 units/L), with normal kidney function. A working diagnosis of possible imatinib-induced drug reaction with eosinophilia and systemic symptoms (DRESS) was made, and imatinib was discontinued. However, the rash persisted despite topical emollients, corticosteroids, and subsequent oral corticosteroids, with minimal symptom relief.

Given the unascertained cutaneous lesions, eosinophilia, unexplained high IgE levels, and absence of a travel history, serology testing for *Strongyloides* was requested and returned positive. Following consultation with the infectious diseases department, ivermectin 200 µg/kg was started on an extended dosing schedule owing to the patient's prior oral corticosteroid use. His symptoms and eosinophilia, which had persisted for months and were unresponsive to other treatments, fully resolved within 2 weeks.

On reassessment, he had a low RegiScar score (1) and Naranjo causality score (0), with no comorbidities, concomitant medications, or drug-specific rash, and a positive response to ivermectin, all consistent with a low pretest probability of drug hypersensitivity [5]. Given the urgency of his cancer treatment, we discussed the case in a multidisciplinary meeting and decided to bypass skin testing in favor of a direct, single-dose drug challenge owing to the delayed nature of the reaction and the risks associated with handling a hazardous TKI tablet [6]. We coordinated with the oncology and pharmacy departments to obtain consent and arrange supervised readministration.

The challenge took place in our Allergy Day Case Unit with signed consent, a 1-week observation period, specific written patient and health care instructions, and a 72-hour clinical and laboratory monitoring plan [7]. The patient experienced no immediate or delayed reactions. One week later, he resumed daily imatinib without issues and continues to take it uneventfully.

Nonspecific rash is common in chronic strongyloidiasis [2]. The infection lacks characteristic clinical features, can present with or without eosinophilia, and may mimic drug hypersensitivity reaction when cutaneous symptoms are prominent [2]. Given the persistence of the infection over decades and the typically low intestinal worm load in asymptomatic cases, travel history and stool samples are often insufficient for diagnosis, making serology essential [3]. In the case we report, the improvement in symptoms and resolution of eosinophilia following treatment with ivermectin, along with the positive serology results, suggest a diagnosis of strongyloidiasis rather than a drug hypersensitivity reaction to imatinib.

Imatinib has transformed the treatment of GIST and is now first-line therapy [8]. The standard protocol involves daily treatment, with escalation to second-line or potentially third-line therapies in cases of disease progression. TKIs, including imatinib, are targeted therapies that disrupt cellular pathways regulating malignant growth. They encompass small molecules and macromolecules such as monoclonal antibodies and antibody-drug conjugates [9]. The selective binding of TKIs influences their potency, mechanism, selectivity, and safety [9]. Imatinib impacts multiple kinases, raising its toxicity risk [9]. In addition to inhibiting *BCR-ABL*, imatinib targets *KIT* and *PDGFRα*, key oncogenic drivers in GIST, making it highly effective in in the treatment of this tumor [8].

Rash affects up to 67% of patients within 2 months of starting imatinib, typically in those on high doses (>600 mg/d); most cases are mild and do not require treatment to be discontinued [10]. However, imatinib is among the top 3 TKIs linked to severe cutaneous adverse reactions, although data on targeted anticancer therapies and this type of reaction remain limited and mostly based on case reports lacking confirmatory diagnoses [4]. The absence of allergist input in many cases contributes to diagnostic confusion, such as urticaria on re-exposure being misinterpreted as confirmation of an AGEP-like reaction [4]. Some studies claim tolerance to re-exposure through premedication, dose adjustment, or desensitization without verified diagnoses [4]. Clear guidelines for managing such cases are lacking. In the present case, a single-dose challenge was chosen following a risk assessment, yet each case demands a multidisciplinary decision by expert allergists, potentially involving patch testing, delayed intradermal testing, or graded challenges [7]. Collaboration with the pharmacy department is critical for dose dilutions, and conducting these challenges in specialized allergy units ensures optimal safety with informed consent, expert supervision, patient education, and rapid-access pathways for emergencies [6]. In complex cases, especially those involving polypharmacy, allergist expertise is essential. For confirmed hypersensitivity, drug desensitization may be an option, although evidence is limited.

The potential role of imatinib in reactivating dormant *Strongyloides* infections is unclear, with infectious complications theoretically associated with the specific immune pathways inhibited. However, targeted immune interference generally raises susceptibility to viral, bacterial, fungal, and parasitic infections [10]. Increased global travel, migration, and the rise in immunomodulator use—particularly during the SARS-CoV-2 pandemic—have expanded the global footprint of strongyloidiasis [2]. Factors such as immunosuppression, HTLV-1 infection, corticosteroid use, and hypogammaglobulinemia are linked to a higher risk of *Strongyloides* infection [1], although the true impact of the disease in immunocompromised patients remains underreported owing to inadequate screening [2]. Misidentification of an infectious rash as a drug reaction may lead to inappropriate treatment cessation, necessitating a switch to second- or third-line therapies. This may compromise long-term survival, particularly in cancer patients [9]. Moreover, without proper diagnosis, many initiate corticosteroids, thus increasing the risk of serious infections with prolonged use [10].

In conclusion, our report underscores the need for heightened awareness of strongyloidiasis in cases of suspected

drug-induced reactions in immunosuppressed patients. Early engagement with allergists, timely serological testing, and multidisciplinary management are essential to avoid misdiagnosis and ensure that life-saving treatments such as imatinib can be safely continued.

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Conflicts of Interest

Dr Madrigal-Burgaleta is a member of the Editorial Board of JIACI. The remaining authors declare that they have no conflicts of interest.

Previous Presentation

An abridged version of this case was presented at the 2024 EAACI Congress, Valencia, Spain.

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