

# Rheumatoid purpura associated with toxocariasis

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**H**uman toxocariasis is a widespread, zoonotic, parasitic disease caused by the presence of larvae from *Toxocara canis* or *Toxocara cati* in human tissues. *Toxocara* spp infections are highly pleomorphic, depending on the number and location of encysted larvae in the body and the immune sensitivity of the host. Practising family physicians need to keep in mind that *Toxocara* spp infection can generate unusual manifestations such as vasculitis or chronic skin disorders. Association between rheumatoid purpura and toxocariasis is rare,<sup>1,2</sup> and the involved mechanisms remain poorly understood.

## Case description

After a 3-week history of fever and influenza syndrome, a 28-year-old woman was admitted to the Department of Nephrology for acute abdominal cramps and palpable purpuric rash all over her legs and abdomen, associated with inflammatory arthralgia affecting her knees and her wrists. Laboratory test results were positive for persistent presence of proteins in her urine (more than 2 g per day) and a high level of mobile immunoglobulin G complexes. A renal biopsy was carried out and showed a proliferative diffuse glomerulonephritis, compatible with the diagnosis of rheumatoid purpura. Results of other immunologic investigations, including complement fractions exploration, rheumatoid factor dosage, and cryoglobulins detection, were negative. Serologic test results for hepatitis B and C, HIV, and antistreptolysin O were negative. In contrast, the *Toxocara* serologic test results were strongly positive by both *Toxocara* enzyme-linked immunosorbent assay and Western blot (WB) analysis. An anthelmintic treatment with diethylcarbamazine was thus added to the corticosteroid therapy and the symptoms rapidly resolved. During the next year, the corticoid doses were progressively diminished and the patient remained well, with normal renal function and no recurrence of the disease.

## Discussion

Henoch-Schönlein purpura is a systemic vasculitis; the dominant clinical manifestations include cutaneous purpura, arthritis, abdominal pain, and nephritis. Although the cause of the symptoms is unknown, Henoch-Schönlein purpura can be associated with toxic, infectious, or neoplastic conditions.<sup>1</sup> The association between *Toxocara* spp infection and vasculitis manifestations is unusual but has been previously described twice in cases of Henoch-Schönlein purpura.<sup>1,2</sup> In the case reported by Hamidou et al,<sup>1</sup> a male patient was hospitalized owing to a clinical spectrum of abdominal pain, fever, and arthritis, appearing within 1 week. He also had a purpuric rash on the lower limbs. Results of biologic investigations to identify a specific cause were all negative except for the *T canis* serology and blood hypereosinophilia. Henoch-Schönlein purpura spontaneously improved in 2 weeks. In this case, the clinicians decided not to prescribe an anthelmintic drug owing to the risk of worsening the immune vasculitis process by larval lysis.<sup>3</sup> Some cases of systemic vasculitis associated with *T canis* infection were also reported.<sup>4,5</sup>

## EDITOR'S KEY POINTS

- Associations between toxocariasis and vasculitis manifestations are unusual and are probably underestimated; management remains unclear.
- The source of *Toxocara* spp contamination is not always easy to identify. In all cases, prophylactic measures must be taken: dogs and cats must be treated by veterinarians; risk behaviour such as poor personal hygiene must be avoided; and dogs must be banned from public playgrounds in order to prevent infection of children from contaminated sand or geophagia.
- *Toxocara* spp infestation should be investigated more systematically when examining patients presenting with vasculitis or chronic skin disorders. This could improve our knowledge about the contribution of anthelmintic treatment and also about the frequency of these associations.

## POINTS DE REPÈRE DU RÉDACTEUR

- Les associations entre la toxocarose et les manifestations de vascularite sont inhabituelles et leur nombre est probablement sous-estimé; la prise en charge demeure incertaine.
- Il n'est pas toujours facile d'identifier la source d'une contamination au *Toxocara* spp. Dans tous les cas, il faut prendre des mesures prophylactiques: les chiens et les chats doivent être traités par un vétérinaire; les comportements à risque comme une mauvaise hygiène personnelle doivent être évités; et il faut bannir les chiens des terrains de jeux publics pour prévenir l'infection des enfants par le sable contaminé ou la géophagie.
- Il faudrait rechercher plus systématiquement une infestation par *Toxocara* spp quand on examine des patients présentant une vascularite ou des problèmes chroniques de peau. Nous pourrions ainsi améliorer nos connaissances concernant la contribution d'un traitement anthelminthique et la fréquence de ces associations.

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Cet article a fait l'objet d'une révision par des pairs.

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## Case Report

The mechanisms involved remain poorly understood, but they probably involve an immune-mediated inflammatory response to the larvae migrating in tissues. Thus, it is hypothesized that parasitic antigens initiate the formation of immune complexes, whose localization in vessel walls either by deposition from the circulation or by in situ formation initiates the vasculitis. Otherwise, the most commonly encountered symptoms associated with toxocariasis are chronic skin disorders, in particular chronic urticaria.<sup>6,7</sup>

Because human toxocariasis is a parasitologic dead end, neither adult roundworms nor eggs can be found in stools to make a direct diagnosis. Moreover, larvae are very rarely found in skin biopsies, and the procedure is too invasive for the severity of the disease. Consequently, the diagnosis is only indirect and 2 types of tests are available for the immunodiagnosis of toxocariasis: the enzyme-linked immunosorbent assay and the WB, both using *T canis* excretory-secretory antigens. Western blot is the more sensitive and specific of the 2 assays.<sup>8</sup> The high specificity of the test is based on the distinction between the cluster of higher-molecular-weight bands, which is not specific and is suggestive of cross reactions with other helminthiasis, and the cluster of lower-molecular-weight bands, which shows a high level of specificity. **Figure 1** shows an example of a positive WB result.

There are no consensus guidelines concerning the treatment of human toxocariasis associated with immune vasculitis processes. Spontaneous favourable evolution without anthelmintic therapy has been described.<sup>1</sup> The contribution of anthelmintic treatment remains controversial in vasculitis because the larval lysis could increase the immune vasculitis process. With other symptomatology, albendazole, diethylcarbamazine, or mebendazole gave satisfying results.<sup>3</sup>

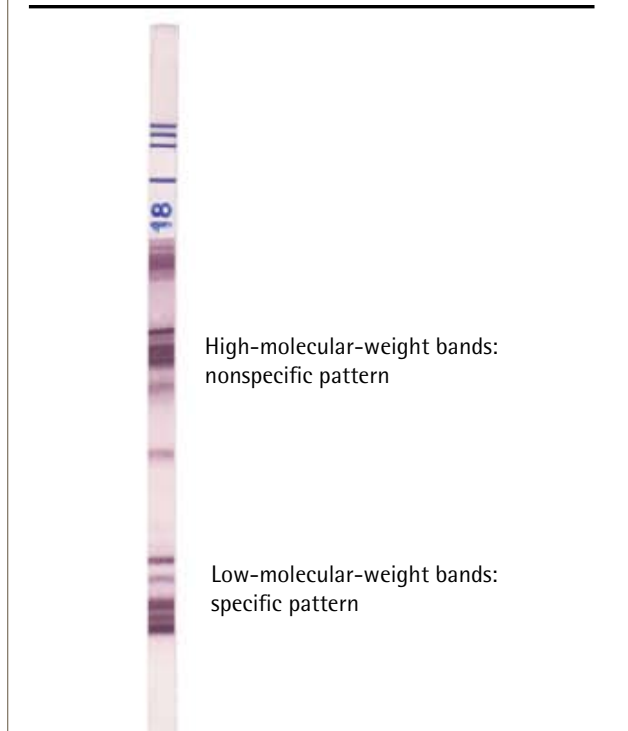
The source of contamination is not always easy to identify. For example, in the case presented here the patient was not a cat or dog owner, but she was living in a rural area and reported frequent contacts with soil (gardening), which might have favoured exposure to *Toxocara* spp.

In all cases, prophylactic measures must be taken; they can prevent reinfection and must be explained carefully to patients. For example, dogs and cats must be treated by veterinarians; risk behaviour such as poor personal hygiene must be avoided; and dogs must be banned from public playgrounds in order to prevent infection of children from contaminated sand or geophagia.

## Conclusion

Vasculitis and chronic skin disorders can be the only suggestive signs of an underlying *Toxocara* spp infection. Toxocaral investigations should be undertaken especially, but not exclusively, in the presence of an evocative clinical spectrum, blood hypereosinophilia,

**Figure 1.** Example of a positive *Toxocara* Western blot result



increased total immunoglobulin E, or risk factors for infection by the parasite (eg, frequent contact with pets [dogs and cats] or with soil [gardening]). We believe *Toxocara* spp infestation should be investigated more systematically when examining patients presenting with vasculitis or chronic skin disorders. This could improve our knowledge about the contribution of anthelmintic treatment and also about the frequency of these associations, which are probably underestimated. 🌿

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**Competing interests**  
None declared

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