

Toxocara canis Myelitis, about a Case in the Neurology Department of the Ignace Deen University Hospital of Conakry

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Abstract

Toxocariasis is a helminthic zoonosis due to the presence in the human body of larvae of *Toxocara* sp., roundworms of the Ascaridae family. Less than 50 cases of central involvement related to toxocarasis have been reported in immunocompetent individuals. This involvement can result in epilepsy, meningoencephalitis, myelitis or encephalopathy. The standard treatment is albendazole at a dosage of 10 to 15 mg/kg/day. The duration of treatment varies greatly depending on the clinical cases reported, ranging from 5 days to several weeks in the case of severe forms. We report a case of myelitis due to *Toxocara canis* in a 14-year-old patient admitted for gait disorders. The laboratory assessment shows isolated hypereosinophilia at 8000 elements per mm³. Medullary magnetic resonance imaging (MRI) showed an intradural process of inflammatory and infectious appearance extended between T10 and L1 levels, hypointense in T1, hyperintense in T2, and homogeneous. Parasitological analysis of the stools noted the presence of high concentrations of *Toxocara canis*. Serology by ELISA (enzyme-linked immunosorbent assay) is strongly positive for toxocariasis, and western blot confirms the presence of antibodies directed against *Toxocara* larvae. Treatment with albendazole 400 mg × 2/day for 10 days associated with corticosteroid therapy (prednisone 50 mg/day for 5 days) allowed the disappearance of pain in 8 days, normalization of eosinophilia and improvement of walking.

Keywords

Myelitis, *Toxocara canis*, Conakry

1. Introduction

Toxocarasis is a helminthic zoonosis caused by the presence in the human body of larvae of *Toxocara* sp., roundworms of the Ascaridae family. To date, only two species, *Toxocara canis* and *Toxocara cati*, have been recognized as causative agents of the human disease. Adults of both species are parasites of the digestive tract of their respective definitive hosts, canids and felids. In the past, *T. canis* was considered the sole cause of human toxocariasis. Although this role is undeniable, there is now substantial evidence that *T. cati* larvae can also parasitize humans, causing a disease with a clinical-biological spectrum similar to that caused by *T. canis* larvae [1]. Central neurological involvement is rare during parasitoses and is therefore little known [2]. Neurological toxocariasis (NT) is an even more severe form of the disease. Although rare, it occurs when *Toxocara* larvae attach themselves to the central or peripheral nervous system. The patient presents with nonspecific symptoms such as fever, headache, and seizures. Depending on the area affected, the infection can cause various serious neurological manifestations, such as meningoencephalitis, or other neurological manifestations, such as eosinophilic meningomyelitis, cerebral vasculitis, epilepsy, myelitis, radiculitis, cranial nerve involvement, or skeletal muscle disease. This form is uncommon [3].

After obtaining the informed consent of the parents, we report a case of *Toxocara canis* myelitis in a 14-year-old patient admitted for gait disturbances.

2. Observation

Our patient is a 14-year-old boy who presented with recent gait disorders. A few days earlier, he had lower back pain radiating to the lower limbs, which gradually developed in a context of fever. No particular known history. The interview found no infectious contagion or recent travel abroad. His clinical examination found a limp when walking, a scoliosis posture with tension in the paravertebral muscles, lively osteotendinous reflexes in the lower limbs, and a decrease in segmental muscle strength rated at 3/5 proportional to the lower limbs. The biological assessment shows a hyperleucocytosis with neutrophil polymorphonuclear predominance at 8000 cells/mm³. Renal function, liver function tests, CRP and blood sugar are normal. The immunological assessment (antinuclear antibodies, anti-native DNA antibodies, ANCA) and serum protein electrophoresis were within normal limits. There was pleocytosis of the CSF with eosinophilia. Medullary magnetic resonance imaging (MRI) showed an intramedullary process of inflammatory appearance extending between levels T11 and L1, measuring 14 cm in height and 3 cm in thickness, hypointense in T1, hyperintense in T2, and homogeneous. Parasitological analysis of the stools noted the presence of high concentrations of *Toxocara canis*. Serology by the ELISA technique (enzyme-linked immunosorbent assay) is strongly positive for toxocariasis, and the western blot confirms the presence of antibodies directed against *Toxocara* larvae. The presence of hypereosinophilia, positive *Toxocara* serology, antibodies directed against *Toxocara* larvae, and the spinal cord MRI appearance allow us to retain the diagnosis of spinal cord

toxocariasis.

Treatment with albendazole 400 mg \times 2/day for 10 days associated with corticosteroid therapy (prednisone 50 mg/day for 5 days) allowed the disappearance of pain in 8 days, the normalization of eosinophilia and the improvement of walking. This is a patient for whom the follow-up continued monthly and for 6 months with a clinical reassessment once a month and under albendazole at 400 mg per day where we noted a perfect recovery without sequelae or pain.

3. Discussion

Less than 50 cases of central involvement related to toxocariasis have been reported in immunocompetent individuals. There is involvement by the larvae of the central or peripheral nervous system. Depending on the area affected, this can cause various serious neurological manifestations, for example meningoencephalitis or myelitis [3]-[5]. Our patient was immunocompetent with myelitis with spastic paraparesis.

Toxocariasis is classically responsible for visceral Larva Migrans syndrome; neurological involvement is exceptional. CSF hypereosinophilia, often transient, is an element of orientation but can be observed in other parasitic diseases, including bilharzia. MRI can show white matter (WM) lesions, in T2 hypersignal. These abnormalities, generally persistent, seem to be related to ischemic lesions secondary to vasculitis [3]-[6].

The clinical picture of our patient suggests myelitis secondary to *Toxocara canis* infection, revealed by a gait disorder. The arguments in favor of this diagnosis are:

- Manifestations of medullary involvement associated with an eosinophilic reaction of the CSF;
- Positive immunodiagnosis by Elisa and Western Blot in the blood and in the CSF;
- Abnormalities on MRI with contrast uptake in favor of an infectious and/or inflammatory involvement;
- Finally, the favorable clinical and biological evolution under specific antihelminthic treatment.

Diagnostic certainty is based on the demonstration of specific IgE by Elisa, an examination also positive in our patient, or by a western blot also positive in our patient [7].

Antihelminthic treatment should be considered in the event of persistent hypereosinophilia or clinical disorders [4]. The reference treatment is albendazole at a dosage of 10 to 15 mg/kg/day. The duration of treatment varies greatly depending on the clinical cases reported, ranging from 5 days to several weeks in the case of severe forms, an optimal duration of treatment has not been determined [3] [8]. The indication for corticosteroid therapy is formal and must precede antihelminthic treatment to limit clinical worsening linked to parasite lysis in ocular and neurological forms (1.5 mg/kg/day for 4 to 6 weeks) [5]. Its prognosis is usually good [9]. In our patient, treatment with albendazole 400 mg \times 2/day for 10 days associated

with corticosteroid therapy (prednisone 50 mg/day for 5 days) allowed the pain to disappear in 8 days, the eosinophilia to normalize and the walking to improve and we continued albendazole for 4 weeks with a clear regression of symptoms. Prevention of toxocariasis involves following normal hygiene rules, treating pets (cats or dogs) and limiting their access to areas reserved for children and vegetable gardens [7].

4. Conclusions

Toxocariasis is a helminthic zoonosis due to the presence in the human body of larvae of *Toxocara* sp., roundworms of the Ascaridae family.

Our patient is a 14-year-old boy admitted for recent onset of gait disorders, which gradually developed in a context of fever. His clinical examination found limping when walking, a scoliosis posture with tension in the paravertebral muscles, lively osteotendinous reflexes in the lower limbs, and a decrease in segmental muscle strength rated at 3/5 proportional to the lower limbs. The biological assessment showed isolated hypereosinophilia at 8000 elements per mm³. Medullary magnetic resonance imaging (MRI) showed an intradural process of inflammatory and infectious appearance extending between the T10 and L1 levels, hypointense in T1, hyperintense in T2, and homogeneous. Parasitological analysis of the stools noted the presence of high concentrations of *Toxocara canis*. Serology by ELISA (enzyme-linked immunosorbent assay) was strongly positive for toxocariasis, and the western blot confirmed the presence of antibodies directed against *Toxocara* larvae.

Treatment with albendazole 400 mg × 2/day for 10 days combined with corticosteroid therapy (prednisone 50 mg/day for 5 days) resulted in the disappearance of pain in 8 days, normalization of eosinophilia and improvement in walking.

Declaration

We hereby certify that we assign copyright to the publisher, that this work has not been published before, and is not under consideration for publication elsewhere.

We certify that all authors have read and approved the final version together and that ethical aspects have been respected throughout this study.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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