

Nodular periorbital dirofilariasis in a child in Romania: case report

Abstract

The *Dirofilaria repens* infection is now recognised as a worldwide emerging parasitic zoonosis, with rare reported human cases in Romania. Herein the clinico-diagnosis features of the nodular periorbital dirofilariasis case in a child are portrayed. This case emphasizes that dirofilariasis should be included in the differential diagnosis of the human nodular disorders at any age and the growing concern from the public health outlook.

Keywords: human dirofilariasis, diagnosis, public health

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Introduction

Dirofilariasis is a recognised worldwide emerging parasitic disease, being endemic in many countries of Europe, with rare human infection reported cases in Romania, despite it's high and increasing prevalence in dogs. Nematodes *Dirofilaria spp.* usually live in canids and felines, in man's body the worms remain in difficulty with a large range of affected organs, most frequently skin, eye and lungs. We present here a case of periorbital subcutaneous dirofilariasis in a 11 year-old boy from Bucharest. The aim of this article is to draw attention to clinicians about differential diagnosis of the nodular disorders and to public health surveyers concerning the current dynamics of these zoonotic parasitic infections.

Case report

In mid-March 2018, MC, a 11 year-old boy from Bucharest has been referred to surgery department of Floreasca Emergency University Hospital, Bucharest for a right periorbital lump. He had no visual or systemic complains, only a local tenderness and a mild paresthesia of the right hemiface were noticed. There was no history of allergy or injuries. Local examination revealed an approximately 3 cm diameter of a non-painful, mild itchy and inflamed mobile nodule without loco-regional lymphadenopathy. The lesion has been first noticed as a round, red papule within 6 weeks ago. The boy has spent school winter vacancies to his grandparents home in Lehliu-Calarasi area, at 64 km far from Bucharest (Figure 1). No personal pets were owned, but a repeated contact of the child with stray dogs and cats was recognised.

At admission, the complete blood cell count was normal, without eosinophilia. The nodule was surgically removed under local anesthesia, with a surprising inside outcome: a living and coiled roundworm emerged intact from lesion. The worm was sent to Colentina Hospital-Parasitic Diseases Department for identification and the patient for medical assessment. Nematod was introduced in a 70% ethylen alcohol solution with 5% glycerin, being macro and microscopically examined (Figure 2).

The worm

The worm was white, thin and round, measuring about 10.5 cm in length and 0.5 mm in its maximum diameter. The both ends were

slender. Microscopically, the anterior extremity was blunty rounded and larger than the posterior one (Figure 3). The thick cuticule-outer layer of filaria worm showed well-definite longitudinal ridges with fine transversal striations. The genital pore was identified at approximately 1 cm from the anterior end. These features have suggested the presence of an immature female of *Dirofilaria repens* Railliet & Henry, 1911 (subgenus *Nochtiella*).

The patient: postsurgical events

An additional specific investigations have been completed to the Parasitic Diseases Department- Colentina Hospital, including blood smear, *Toxocara spp* and *Trichinella spiralis* ELISA serology tests and general immunogram, including Ig E. No microfilaremia were detected in his blood either anti *Toxocara/Trichinella* antibodies. A raised value of total IgG was present (2788 mg/dL, n=700-1600 mg/dL), with normal values for other classes of Ig. No systemic antiparasitic treatment was prescribed to patient, the local and general evolution being uneventfully.

<http://www.calarasi.ro/Images/Calarasi-in-Europa.jpg>



Figure 1 Local map of suspected area of transmission.

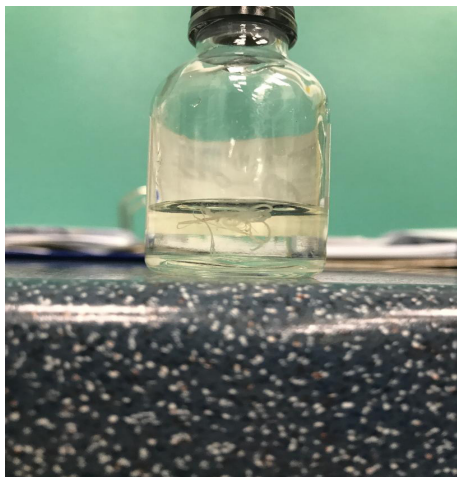


Figure 2 Clinical case: the intact immature worm.

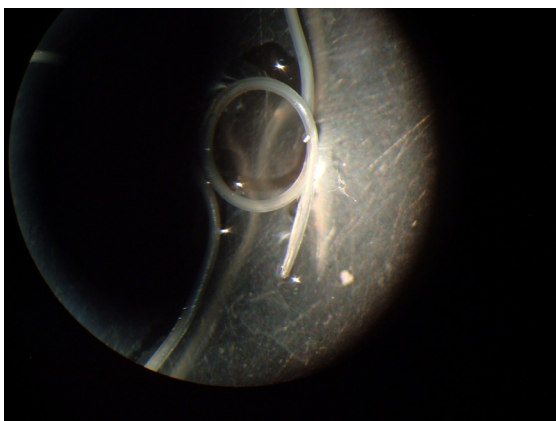


Figure 3 Microscopy of anterior and posterior ends.

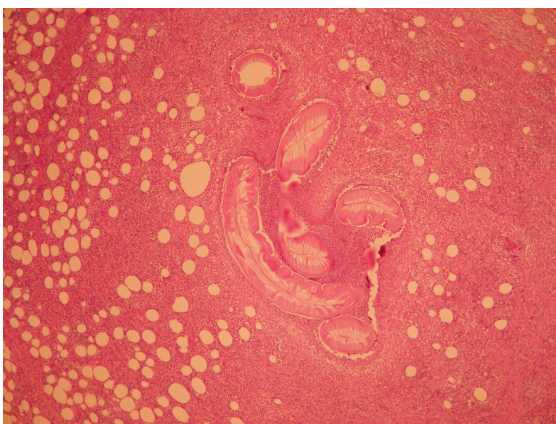


Figure 4 *D. repens* histologic section-HE stain.

Discussion

In 1903 V Babes, first reported animal dirofilariasis in Romania, followed by C Motas and Popovici in 1916.¹ In 1935 Fr. Popescu has studied the spread of disease in dog population with a prevalence of 65.51% in the southern counties of the country.¹ Olteanu has made a general review of dirofilariasis in Romania for the period of 1956-1995 with a general prevalence of 35% dirofilariasis in the stray dogs: among 1640 dogs a prevalence of 4.3% *D. immitis* and 1.34% *D. repens*, respectively were recorded.²

Human Romanian cases were sporadically and much later reported by other authors (Gherman, 1990, Voiculescu, 1996,³ recently I. Popescu,⁴ 2012, Arbune, 2015⁵), including other filarial worms with dog or horse origin such as *Setaria labiatopapillosa* (Panaitescu, 1999).⁶

Dirofilariasis is now recognised as a worldwide-emerging parasitic zoonosis. The most important risk factor is the increasing population of mosquitos due to climate change with milder winters associated with highly infected dogs as main reservoir. In our case there are neither epidemiologic data on infection prevalence in local dogs, or entomological ones concerning the identification of mosquito vectors involved in transmission of *D. repens* in the considered areas (Bucharest, Lehliu). However, a prevalence study of canine populations conducted in 2015 by Ionica et al has disclosed the highest value (18.8%) in the Romanian southeast counties.⁷

The 2018 winter was an unusual mild season for this region, which geographically belongs to Romanian Plain. The area is located on southeastern side of Romania onto Danube left bank, neighborhood Bulgaria. The climate is temperate continental, with a 500-540 mm average of precipitations and abundant mosquitoes populations.

Many cases of the human dirofilarial disease were reported from several European countries some located into Romania environs: Hungary,⁸ Serbia,⁹ Bulgaria,¹⁰ Moldova,¹¹ Ukraine,¹² Russia,^{13,14} as well as in Italy^{15,16} and France.¹⁷ The seroprevalence studies conducted in both humans and dogs have proved the wide European exposure at *D. repens*.

As in our case, the human *D. repens* disease is a slight infection, only the eye involvement rises more symptomatology. The presence of the isolated nodules may be a challenging diagnosis issue, especially on some body areas such as breast, head or neck since the likelihood of a malignancy or a granulomatous disorder misdiagnosis. Raccurt has indicated that 50% of dirofilarial superficial nodules are on the head, then conjunctiva and orbit (29.4%).¹⁸

Diagnosis of human subcutaneous dirofilariasis rely on the morphology of the biopsy material (specimen), the polymerase chain reaction technique being a controversial alternative.¹⁹ Specific serology was negative for *Toxocara spp.* and *Trichinella spiralis* as most appropriate serologic assays available at time, than no cross-reactivity was disclosed between this three tissular nematodes.

Conclusion

This case suggests that dirofilariasis should be included in the differential diagnosis of the human nodular disorders at any age and a worried concern from public health outlook. As a vector-borne disease, dirofilariasis is a serious threat for the human health adding this parasitic disease to other notorious infections with a hyperendemic profile in Romania such as cystic echinococcosis or toxocariasis, both by digestive route of transmission, but all three with similar animal reservoir.

Acknowledgments

None.

Conflicts of interest

Authors declare that there is no conflicts of interest.

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