

## Prevalence of *Toxocara* egg in public parks of Kermanshah city, the West of Iran

Farid Rezaei<sup>1\*</sup>, Maryam Karimi Dehkordi<sup>2</sup> and Fatemeh Azizinejad<sup>3</sup>

<sup>1</sup> Assistant Professor, Department of Pathobiology, Faculty of Veterinary Medicine, Razi University, Kermanshah, Iran

<sup>2</sup> Assistant Professor, Department of clinical Sciences, Faculty of Veterinary Medicine, Shahrekord Branch, Islamic Azad University, Shahrekord, Iran

<sup>3</sup> DVM Graduate, Faculty of Veterinary Medicine, Razi University, Kermanshah, Iran

Received: 29.11.2020

Accepted: 01.03.2021

### Abstract

Toxocariasis is one of the most important parasitic and widespread infections which is caused by direct contact with dogs and cats or contact with sources contaminated with the parasite's eggs, such as soil and grass, in public places where dogs and cats travel, as well as the consumption of contaminated vegetables. The aim of this study was to investigate the contamination of soil and grass in different parks of Kermanshah, West of Iran, with *Toxocara* eggs. In this descriptive cross-sectional study, 120 soil and 120 grass samples were collected from a total of 16 public parks and gardens in Kermanshah, then the parasitic contamination of soil and grass samples examined by flotation deposition method. Results showed that out of 16 parks studied, 15 parks were infected with *Toxocara* species eggs in terms of soil samples (93.7%) and 13 parks in terms of grass samples (81.2%). Also, the prevalence of infection with *Toxocara* species eggs was 70.8% in soil samples and 30.8% in grass samples. Results of this study showed that the contamination of Kermanshah parks with *Toxocara* species eggs is high, which increases the risk of toxocariasis in humans. Therefore, to reduce the risk of human infection, the need for control programs such as prevention of environmental contamination with parasite eggs, especially in public places such as public parks, with dog feces is recommended.

**Key words:** *Toxocara*, VLM, Cat, Dog, Kermanshah

---

\* Corresponding Author: Farid Rezaei, Assistant Professor, Department of Pathobiology, Faculty of Veterinary Medicine, Razi University, Kermanshah, Iran  
E-mail: f.rezaei@razi.ac.ir



© 2020 by the authors. Licensee SCU, Ahvaz, Iran. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0 license) (<http://creativecommons.org/licenses/by-nc/4.0/>).

## References

- Abou-El-Naga I.F. (2018). Developmental stages and viability of *Toxocara canis* eggs outside the host. *Biomédica*, 38,189-97.
- Ahmad, N., Maqbool, A., Saeed, K., Ashraf, K., Qamar, & M.F. (2011). Toxocariasis, its Zoonotic importance and Chemotherapy in dogs. *The Journal of Animal & Plant Sciences*, 21(2), 142-145.
- Akhlaghi, L., Oormazdi, H., SarrafNia, A., Vaziri, S., Jadidian, K. & Leghayi, Z. (2005). Survey of Seroepidemiology of Toxocariasis in 2-12 years old children in Mahidasht region, Kermanshah, Iran. *Iran Medical sciences University Journal*, 13(52), 41-48(in Persian).
- GharaDaghi, Y., & Shabestari Asl, S.A. (2011). Prevalence of Infestation of *Toxocara* spp. In public parks of Tabriz, Iran. *Rafsanjan Medical Sciences University Journal*, 11(2), 173-178 (in Persian).
- Ghashghaei, O., Khedri, J., Jahangiri-Nasr, F., Hashemi, S.H., & Fard, S.N. (2016). Contamination of soil samples of public parks with *Toxocara* spp. eggs in Kermanshah, Iran. *İstanbul Üniversitesi Veteriner Fakültesi Dergisi*, 42(1), 47-50.
- Ghorbani, R., Shafiei, A.H., Anamipour, A., & Naji, S. (2013). Prevalence of *Toxocara* eggs in Public Park of Shiraz, Iran. *Kerman Medical Sciences University Journal*, 21(2), 174-179(in Persian).
- Golek, H., & Al-Saeed, A.T. (2019). Contamination of soil with *Toxocara* and other helminthes in soils of Amadyia district, Duhok Governorate, Kurdistan region- Iraq. *Applied Ecology and Environmental*, 17(6), 14883-14891.
- Khademvatan, S., Abdizadeh, R., & Tavalla, M. (2014). Molecular characterization of *Toxocara* spp. from soil of public areas in Ahvaz southwestern Iran. *Acta tropica*, 1(135), 50-54.
- Khazan, H., Khazaei, M., Tabaei, S.S., & Mehrabi, A. (2012). Prevalence of *Toxocara* Spp. eggs in Public Parks in Tehran City, Iran. *Iranian Journal of Parasitology*, 7(3), 38-42.
- Macpherson, C.N.L. (2013). The epidemiology and public health importance of toxocariasis: a zoonosis of global importance. *International Journal for Parasitology*, 43, 999–1008.
- Maleki, B., Khorshidi, A., Gorgipour, M., Mirzapour, A., Majidiani, H., & Foroutan, M. (2018). Prevalence of *Toxocara* spp. eggs in soil of public areas in Iran: a systematic review and meta-analysis. *Alexandria Journal of Medicine*, 54(2), 97-101.
- Maleki, B., Seyyed-Tabaei, S.J., Tahvildar, F., & Khorshidi, A. (2016). Soil contamination of public places with *Toxocara* spp. egg in Kermanshah, Iran, in 2014. *Novelty in Biomedicine*, 3, 105-109.
- Maraghi, S., Jafari, K.M., Sadjjadi, S.M., Latifi, S.M., & Zibaei, M. (2014). Study on the contamination of Abadan public parks soil with *Toxocara* spp. Eggs. *Journal of Environmental Health Science and Engineering*, 12(86), 1-3.
- Maraghi, S., Rafiei, A., Hajihosseini, R., & Sadjjadi, S.M. (2012). Seroprevalence of toxocariasis in hypereosinophilic individuals in Ahwaz, South-Western Iran. *Journal of Helminthology*, 86(2), 241-244.
- Maurelli, M.P., Santaniello, A., Fioretti, A., Cringoli, G., Rinaldi, L., & Menna, L.F. (2019). The presence of *Toxocara* eggs on dog's fur as potential zoonotic risk in animal-assisted interventions: A systematic review. *Animals*, 9(10), 827-832.
- Mazhab-Jafari, K., Zibaei, M., Maraghi, S., Rouhandeh, R., Helichi, M., Ghafeli-Nejad, M., Zangeneh, S., & Farhadiannezhad, M. (2019). Prevalence of *Toxocara* eggs in the soil of public parks of Khorramshahr city, Southwest Iran. *Annals of Parasitology*, 65(4), 351-356.
- Nava, A.I., Del- Campo, N.C., Verdugo, I.E., Loera, J.J., Tizoc, C.L., & Campacho, S.M. (2020). Prevalence and Viability of *Toxocara* spp. Eggs in Soil of Public Parks in Northwestern Mexico. *Iranian Journal of Parasitology*, 15(2), 196-203.
- Oge, S., & Oge, H. (2000). Prevalence of *Toxocara* spp. eggs in the soil of public parks in Ankara, Turkey. *Deutsche Tierärztliche Wochenschrift*, 107, 72-75.
- Otero, D., Alho, A.M., Nijse, R., Roelfsema, J., & Overgaaauw, P. (2018) de Carvalho LM. Environmental contamination with *Toxocara* spp. eggs in public parks and playground sandpits of Greater Lisbon, Portugal. *Journal of Infection and Public Health*, 11(1), 94-98.
- Overgaaauw, P.A.M., Van Zutphen, L., Hoek, D., Yaya, F.O., Roelfsema, J., Pinelli, E., Van Knapen, F., & Kortbeek, L.M. (2009). Zoonotic parasites in fecal samples and fur from dogs and cats in The Netherlands. *Veterinary Parasitology*, 163(1-2), 115-122.

- Pezezhki, A., Haniloo, A., Alejafar, A., & Mohammadi-Ghalehbin, B. (2017). Detection of *Toxocara* spp. eggs in the soil of public places in and around of Ardabil City, Northwestern Iran. *Iranian journal of parasitology*, 12(1), 136-142.
- Raissi, V., Raiesi, O., Etemadi, S., Firoozeh, F., Getso, M., Hadi, A.M., & Zibaei, M. (2020). Environmental soil contamination by *Toxocara* species eggs in public places of Ilam, Iran. *Annals of Agricultural and Environmental Medicine*, 27(1), 15-18.
- Rastgoo, F., Rostaee, Z., Mosleh, F., Hasannezhad, A., Ghorbaani, B.H., & Abolghazi, A. (2019). Study of Soil Contamination by *Toxocara* Spp. Eggs in Fasa, South of Iran from April to December 2018. *Journal of Fasa University of Medical Sciences/Majallah-i Danishgah-i Ulum-i Pizishki-i Fasa*, 9(4), 1743-1748.
- Rezanezhad, H., Sarvestani, A., Armand, B., & Shadmamand, E. (2017). Soil contamination with *Toxocara* spp. ova in public parks, elementary schools and kindergartens in Jahrom City, Southern Iran. *Pars Journal of Medical Sciences (Jahrom Medical Journal)*, 15(1), 1-6.
- Santarem, V.A., Pereira, V.C., & Alegre, B.C.P. (2012). Contamination of public parks in Presidente Prudente (Sao Paulo, Brazil) by *Toxocara* spp. Eggs. *Revista Brasileira Parasitologia Veterinary Jaboticabal*, 21(3), 323-325.
- Saraei, M., Zakilo, M., Tavazoei, Y., Jahanihashemi, H., & Shahnazi, M. (2012). Contamination of soil and grass to *Toxocara* spp. eggs in public parks of Qazvin, Iran. *Asian Pacific Journal of Tropical Biomedicine*, 2(2), S1156-S1158.
- Sharifi Sarasiabi K., Madani A., Zare S. (2002). Prevalence of intestinal parasites in primary school publish of Bandar Abbas. *Journal of Hormozgan University of Medical Sciences*, 4(5), 25-30.
- Shchelkanov, M., Moskvina, T., Nesterova, Y., Zakjarova, G., Tatyana, K., Galkina, I., & Kiseleva, M. (2020). *Toxocara* Prevalence in Soil and Humans in Vladivostok: A Long-Term Study. *Archives of Pediatric Infectious Diseases*, 8(2), e86679.
- Shirvani, G., Abdizadeh, R., Manouchehri-Naeini, K., Mortezaei, S., & Khaksar, M. (2019). The Study of Soil Contamination by *Toxocara* spp. Eggs in Different Areas of Chaharmahal and Bakhtiari Province, Southwest Iran. *International Journal of Epidemiologic Research*, 6(4), 177-181.
- Stojcevic, D., Susic, V., & Lucinger, S. (2010). Contamination of soil and sand with parasite elements as a risk factor for human health in public parks and playgrounds in Pula. *Croatia Veterinary Arhiv*, 80, 733-742.
- Tavassoli, M., Hadian, M., Charesaz, S., & Javadi, S. (2008). *Toxocara* spp. Eggs in public parks of Urmia city, West Azerbaijan Province. Iran. *Iranian Journal of Parasitology*, 3, 24-29.
- Tavassoli, M., Javadi, S., Firozi, R., Rezaei, F., Khezri, A.R., & Hadian, M. (2012). Hair Contamination of Sheepdog and Pet Dogs with *Toxocara canis* Eggs. *Iranian Journal of Parasitology*, 7(4), 110-115.
- Toparlak, M., Gargili, A., Tuzer, E., Keles, V., Uluta Esatgul, M., & Cetinkaya, H. (2002). Contamination of Children's Playground Sandpits with *Toxocara* eggs in Istanbul, Turkey. *Turkish Journal of Veterinary and Animal Sciences*, 26, 317-320.
- Vafae Eslahi A., Badri M., Khorshidi A., Majidiani H., Hooshmand E., Hosseini H., Taghipour A., Foroutan M., Pestehchian N., Firoozeh F., Riahi S.M., Zibaei M. (2020). Prevalence of *Toxocara* and *Toxascaris* infection among human and animals in Iran with meta-analysis approach. *BMC Infectious Diseases*, 20(20), <https://doi.org/10.1186/s12879-020-4759-8>.
- Wakid, M.H., Azhar, E.I., & Zafar, T.A. (2009). Intestinal Parasitic Infection among Food Handlers in the Holy City of Makkah during Hajj Season 1428 Hegira. *Journal of King Abdulaziz University Medical Sciences*, 16, 39-52.
- Zibaei, M., Abdollahpour, F., Birjandi, M., & Firoozeh, F. (2010). Soil contamination with *Toxocara* spp. eggs in the public parks from three areas of Khorram Abad, Iran. *Nepal Medical College Journal*, 12(2), 63-65.
- Zibaei, M., Bahadory, S., Cardillo, N., & Khatami, A.R. (2017). Soil contamination with eggs of *Toxocara* species in public parks of Karaj, Iran. *International Journal of Enteric Pathogens*, 5(2), 45-48.