MAIN HELMINTHIASES AND CONTROL MEASURES OF DOGS IN THE TERRITORY OF THE REPUBLIC OF KARAKALPAKSTAN

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Abstract. Helminthiases are parasitic worm infections that commonly affect domestic dogs and pose both veterinary and public health concerns. This article reviews the main helminth infections present in the territory of the Republic of Karakalpakstan — including nematodes, cestodes and trematodes — and discusses their epidemiology, clinical signs, diagnosis, and practical control measures. Emphasis is placed on integrated control strategies that combine anthelmintic treatment, environmental sanitation, owner education, and veterinary surveillance.

Keywords: helminthiases, dogs, Karakalpakstan, nematodes, cestodes, control measures, deworming, zoonosis

Introduction. Dogs are common companions and working animals throughout Karakalpakstan. Consequently, they play an important role in the maintenance and transmission of helminth infections. Moreover, because some canine helminths are zoonotic, infections in dogs have direct implications for human health. Therefore, understanding which helminth species are present locally and applying appropriate control measures is essential for both animal welfare and public health. This article summarizes the main helminthiases affecting dogs in Karakalpakstan and proposes control measures tailored to the region's climatic and socio-economic context. Firstly, the common helminth groups and their life cycles are described. Secondly, clinical presentation and diagnostic approaches are reviewed. Finally, integrated control strategies and specific recommendations for implementation in Karakalpakstan are presented.

Nematodes commonly found in dogs include Toxocara canis, Ancylostoma caninum (hookworm), and Trichuris vulpis (whipworm). Toxocara canis is widespread and often more prevalent in young dogs; furthermore, it is a well-known zoonosis that causes visceral and ocular larva migrans in humans. Hookworms such as Ancylostoma can cause anaemia and enteric signs in dogs, and importantly, cutaneous larva migrans in humans. Whipworms tend to cause chronic large-bowel disease and may be less obvious in subclinical infections [3].

The most prevalent cestodes in dogs are members of the Taenia and Echinococcus genera as well as Dipylidium caninum. Dipylidium caninum is

commonly transmitted through the ingestion of infected fleas; therefore, areas with poor ectoparasite control commonly report higher prevalence. In contrast, Echinococcus granulosus (the causative agent of hydatid disease) has a significant zoonotic potential and is associated with the livestock–dog cycle. Given the agricultural practices in parts of Karakalpakstan, this cestode remains an important concern.

Although trematode infections are generally less common in dogs compared with nematodes and cestodes, certain flukes may be present in local water sources or associated intermediate hosts. Where dogs have access to aquatic environments and consume fish, snails, or amphibians, fluke transmission may occur [1].

Clinical manifestations of helminth infection are variable and depend on parasite species, infection burden, age, and host health status. Young puppies commonly exhibit poor growth, a pot-bellied appearance, vomiting, diarrhoea, and respiratory signs in heavy Toxocara infections. Hookworms may cause lethargy, pallor (from blood loss), melena, or chronic diarrhea. Cestode infections often present with milky segments visible around the perineum or in faeces, whereas Echinococcus infections are typically silent in the definitive host but pose severe risks to humans. Diagnosis is commonly based on coprological examination (faecal flotation and sedimentation), which detects eggs or proglottids. Additionally, for some parasites, serology or imaging (ultrasound, radiography) may be useful. It is important to note that intermittent egg shedding and the prepatent period can lead to false-negative faecal tests; therefore, repeated sampling or combining diagnostic methods increases sensitivity.

Several ecological and socio-economic factors influence helminth distribution in Karakalpakstan. First, climatic conditions — including arid to semi-arid zones and seasonal water sources — affect survival of free-living parasite stages and the presence of intermediate hosts. Second, pastoral and agricultural practices that bring dogs into close contact with livestock raise the risk for Echinococcus and Taenia spp. Third, limited access to regular veterinary care, stray dog populations, and inadequate waste management contribute to ongoing transmission. Finally, cultural practices — such as home slaughtering of livestock without controlled carcass disposal — may facilitate lifecycle completion for certain cestodes.

Effective control of canine helminthiases relies on an integrated approach. Regular and strategic use of broad-spectrum anthelmintics is the cornerstone of

control. For puppies, initial treatment should begin at two weeks of age and continue every 2–3 weeks until 12 weeks, and thereafter monthly until six months, followed by routine treatments every 3–6 months for adult dogs depending on exposure risk. Products combining nematocidal and cestocidal activity are preferred when available. For areas with Echinococcus risk, praziquantel-based regimens at shorter intervals (e.g., every 4–6 weeks in high-risk settings) may be indicated to interrupt transmission. Furthermore, targeted deworming during periods of highest risk (e.g., after scavenging or known exposure) can be effective. It is essential to follow manufacturer dosages based on body weight and to involve licensed veterinarians when possible.

Controlling fleas is directly linked to reducing Dipylidium caninum transmission. Therefore, using appropriate topical or systemic flea control products on dogs and treating premises (bedding, kennels) reduces intermediate host availability. Moreover, integrated pest management for fleas in households complements veterinary treatments.

Reducing environmental contamination with canine faeces decreases egg and larval survival. Municipal and rural waste disposal systems should prioritise safe removal of dog droppings, especially near children's play areas, schools, and markets. Community campaigns to pick up and correctly dispose of dog faeces, combined with public education about zoonotic risks, will reduce human exposure to Toxocara and hookworm larvae. For livestock-related cestodes, proper disposal or controlled rendering of offal during home slaughter prevents dogs from ingesting infected viscera. Furthermore, fencing or restraining dogs from accessing slaughter sites is a practical measure.

Conclusion. Helminthiases of dogs in the Republic of Karakalpakstan represent a multifaceted challenge that affects animal welfare and presents zoonotic risks for humans. However, by implementing integrated control measures the burden of these infections can be substantially reduced. Importantly, community engagement and coordination between public health, veterinary services, and agricultural stakeholders are essential for long-term success.

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