



## Dipylidium caninum in dogs pdf

Species of flatworm This article needs additional citations for verification. Please help improve this article by adding citations to reliable sources: "Dipylidium caninum" - news · newspapers · books · scholar · JSTOR (February 2017) (Learn how and when to remove this template message) Dipylidium caninum Adult Dipylidium caninum. The scolex of the worm is very narrow and the proglottids get larger as they mature Scientific classification Kingdom: Animalia Phylum: Platyhelminthes Class: Cestoda Order: Cyclophyllidea Family: Dipylidium Species: D. caninum Binomial name Dipylidium caninum(Linnaeus, 1758) Dipylidium life cycle Dipylidium caninum, also called the flea tapeworm, or cucumber-seed-like proglottids, though these also resemble grains of rice or sesame seeds), is a cyclophyllid cestode that infects organisms afflicted with fleas and canine chewing lice, including dogs, cats, and sometimes human pet-owners, especially children. Adult morphology The adult worm is about 18 inches (46 cm) long. Gravid proglottids containing the worm's microscopic flea larvae (the intermediate hosts) in the surrounding environment. As in all members of family Dipylidiidae, proglottids of the adult worm have genital pores on both sides (hence the name double-pore tapeworm). Each side has a set of male and female reproductive organs. The uterus is paired with 16 to 20 radial branches each. The scolex has a retractable rostellum with four rows of hooks, along with the four suckers that all cyclophyllid cestodes have. Life cycle is primarily canines, and occasionally felines, and in rare cases young children. The intermediate hosts include fleas (Ctenocephalides spp.) and chewing lice. The first stage in the life cycle is when the gravid proglottids are either passed out through faecal matter, or actively crawl out of the host. The gravid proglottids once out of the definitive host release eggs. Then, an intermediate host (the larval stage of a flea or chewing louse) will ingest an egg, which develops into a cysticercoid larva. The cysticercoid larva remains viable, but is not infective to carnivores until the flea hatches to an adult and begins feeding on a host (e.g. a dog). Approximately 36 hours after the flea has consumed a blood meal, the infective metacestode larva must be ingested in a flea by the dog or cat during grooming in order to develop. Humans can also become infected by D. caninum by accidentally ingesting an infected flea. In the small intestine of the definitive host, the metacestode develops into an adult tapeworm, which reaches maturity 4-6 weeks after ingestion. This adult tapeworm, which reaches maturity 4-6 weeks after ingestion. tapeworm and the life cycle starts all over again.[1] Geographic Distribution This parasite occurs worldwide in animals, such as dogs and cats, as well as in humans, though to a significantly lesser degree. It is the most common tapeworm of dogs and is relatively common in cats. Despite human diplydiasis being rare, instances have been reported from every inhabited continent.[2] Human instances of diplydiasis are reported globally, and unsurprisingly roughly one third of the cases occur in children less than 6 months of age. The most at-risk age group is those that range from 2 months to 4 years old. [3] Pet infections Tapeworm infection usually does not cause pathology in the dog or cat and most pets show no adverse reaction to infection other than increased appetite. The bulk of infections are asymptomatic and the infections are generally mildly so. Pets behavior may reflect the presence of anal discomfort and itching, or pruritus. This could result in the 'butt-scooching' across the floor, grass or carpeting. It may be accompanied by slight gastrointestinal disturbances, as this is the region where the worms inhabit. Though not a pathology of the diplydiasis, the most unnerving sign of the infection is the presence of proglottids in the animals, or child's, feces. These proglottids can also be found near the perianal region, in the feces, and in diapers (children). The motile proglottids can actively crawl out of the anus of the infected animal/person and migrate small distances, thus potentially covering this array of neighboring surfaces. It is from these locations that the larval stage of the flea will come along and ingest them. Then the metacestode stage, a cysticercoid, develops in the coelomic cavity (abdominal cavity; main body cavity) of the flea matures into an adult. These freshly passed proglottids are motile, allowing them to also be found on the floor and furniture, from a migration out of a pets anus and could be compared to resembling fly larvae, or maggots.[2] The other tapeworm infecting cats is Taenia taeniaeformis, though this form is much less commonly encountered than D. caninum. A recent (2018) study using genetical analysis and experimental infections and life-cycles showed that two different species might be involved.[4][5] Human infections A human infection with D. caninum is rare, but if an infection does occur, it is more likely to occur in young children. As of the early 1960s, the number of cases of D. caninum in the U.S. was a mere 21. Therefore, human infection of Dipylidium caninum, or diplydiasis, is a rare occasion. It is largely agreed across the parasitology community that despite the reports of this disease occurring, there are very likely numerous cases that have gone unnoticed and unreported because of its subtle and minor pathology in humans, in addition to its scarceness in clinical records. The adult tapeworm grows within the host for 3-4 weeks after initial infection. The number of parasites the host is initially infected with is directly related to the number of cysticercoid juveniles present in the fleas coelom. The load of parasites present in the humans is lower, luckily, as the life cycle is not occurring in the ideal conditions or species as humans are not the definitive host.[6] Many cases have an unexciting course of infection, as can be depicted in two cases occurring in the 1960s. The first case occurred in a 9-month-old female. Mother found motile proglottids the child's diaper, later identified as D. caninum. The child had no apparent signs or symptoms. The presumed source of infections was one of the family's four Labrador retrievers, two of which were found to already have been infected with D. caninum. The second additional case occurred in an 18-month-old male. Mother found motile proglottids in the child infection.[7] Young children and toddlers are at a greater risk of infection because of how they interact with their pets. A human may attain an infected individual: mild diarrhea, abdominal colic, anorexia, restlessness constipation, rectal itching, and pain due to emerging proglottids through the anal cavity.[8] Treatment and prevention As with most tapeworms are praziquantel or niclosamide. Pets can be prevented from becoming infested with tapeworm if they are treated prophylactically with a product which kills the intermediate host (the flea) before the infective metacestode can develop. Some isoxazoline products are registered to prevent flea tapeworm infestations using this method. Gallery Dipylidium caninum proglottid D. caninum proglottid D. caninum proglottid D. caninum proglottid D. caninum for Disease Control and Prevention. Retrieved 24 April 2015. ^ a b "CDC - DPDx - Dipylidium caninum". www.cdc.gov. 2019-07-10. Retrieved 2020-05-07. ^ Neira O, Patricia; Jofré M, Leonor; Muñoz S, Nelson (December 2008). "Infección por Dipylidium caninum en un preescolar: Presentación del caso y revisión de la literatura". Revista chilena de infectología. 25 (6). doi:10.4067/S0716-10182008000600010. ISSN 0716-1018. ^ Labuschagne, Michel; Beugnet, Frédéric; Rehbein, Steffen; Guillot, Jacques; Fourie, Josephus; Crafford, Dionne (2018). "Analysis of Dipylidium caninum tapeworms from dogs and cats, or their respective fleas. Part 1. Molecular characterization of Dipylidium caninum: genetic analysis supporting two distinct species adapted to dogs and cats". Parasite. 25: 30. doi:10.1051/parasite/2018028. PMC 6013089. PMID 29806592. ^ Beugnet, Frédéric; Labuschagne, Michel; Vos, Christa de; Crafford, Dionne; Fourie, Josephus (2018). "Analysis of Dipylidium caninum tapeworms from dogs and cats, or their respective fleas. Part 2. Distinct canine and feline host association with two different Dipylidium caninum genotypes". Parasite. 25: 31. doi:10.1051/parasite/2018029. PMC 6013090. PMID 29806593. Bowman DD. Georgis'Parasitology for Veterinarians. Sixth edition Philadelphia. PA: Saunders Company; 1995:145-6 Thompson, James H. (1963). "Human Dipylidium caninum Infection". The Journal of Parasitology. 49 (3): 402. doi:10.2307/3275807. ISSN 0022-3395. JSTOR 3275807. A Garcia-Agudo, Lidia; Rodriguez-Iglesias, Manuel (26 May 2014). "Dipylidium caninum infection in an infant: a rare case report and literature review" (PDF). Asian Pacific Journal of Tropical Biomedicine. 4 (2): S565-two and pylidium = entrances plus caninum for the canine host. SYNONYMS Witenburg (1932) stated that "Dipylidium is in probably the only species in the genus." He then goes onto list numerous synonyms including among species described as Dipylidium: Dipylidium is in probably the only species in the genus." He then goes onto list numerous synonyms including among species described as Dipylidium: Dipylidium is in probably the only species in the genus." He then goes onto list numerous synonyms including among species described as Dipylidium: Dipylidium: Dipylidium is in probably the only species in the genus." He then goes onto list numerous synonyms including among species described as Dipylidium: Dipylidium is in probably the only species in the genus." He then goes onto list numerous synonyms including among species described as Dipylidium: Dipylidium is in probably the only species in the genus." He then goes onto list numerous synonyms including among species described as Dipylidium: Dipylidium is in probably the only species in the genus." 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He then goes onto list numerous synonyms including among species described as Dipylidium is in probably the on Dipylidiumcaracidoi Lopez-Neyra, 1927; Dipylidiumcati Neumann, 1896; Dipylidiumcompactum Milzner, 1926; Dipylidiumcucumerinum (Block, 1782); Dipylidiumcucumeri Lopez-Neyra, 1927; Dipylidiumsexcoronatum Ratz, 1900; Dipylidiumwalkeri Sonhi, 1923. The one other species Witenberg thought might be valid was Dipylidiumbuencaminoi Tubangui, 1925 for very small specimens with very small eggs from a dog in Manilla, Phillippines; Venard (1938) thought there were three species of Dipylidium: Dipylidiumcaninum, Dipylidiumbuencaminoi, and Dipylidiumotocyonis Joyeux, Baer, & Martin, 1936 described from specimens recovered from Otocyonmegalictis in Somalia. HISTORY:Dipylidiumcaninum has been known to man since the time of the ancient Babylonians (Venard, 1938). In 1758, Linnaeus, recognized the parasite and named it Taeniacanina. In 1863, Leuckart created the genus Dipylidium, but it was not until 1893 until it was described by Diamare. Early work on the life cycle was reported by Neveau-Lemaire (1936). This parasite is in one of the most common tapeworm of cats in North America (Flick, 1973; Hitchcock, 1953; Lillis, 1967) and perhaps throughout the world (Arundel, 1970; Baker et al., 1989; Bearup, 1960; Boreham and Boreham, 1990; Chandler, 1925; Clarkson and Owen, 1959; Collins, 1973; Coman, et al., 1981; Cowper, 1978; Dubey, 1960; Engbaek et al., 1984; Esle et al., 1977; Gadale, et al, 1988-89; Gregory and Munday, 1976; Hutchison, 1957; Kelly and Ng, 1975; Lewis, 1927a & 1927b; McColm and Hutchison, 1985; Niak, 1972; Nichol et al., 1981a & 1981b; Poglayen, et al., 1985; Ryan, 1976; Umeche and Ima, 1988). LOCATION IN HOST: The adult Dipylidiumcaninum is in found anchored to the wall of the small intestine by its scolex, its holdfast organelle. In nature, the metacestode or larval stage of the parasite is in found within the body cavity of Ctenocephalidesfelis, the cat flea, the dog louse (Boreham and Boreham, 1990; Georgi 1987; Pugh, 1987; Zimmermann , 1937). IDENTIFICATION: The scolex of the adult Dipylidiumcaninum is in tiny, measuring less than 0.5 mm in diameter. It possesses four muscular suckers that aid in attachment and locomotion. At the apex of the scolex is in the rostellum, a dome-shaped projection. The rostellum of Dipylidium. caninum is in armed with four to seven rows of tiny, backward facing, rose-thorn-like hooks and is in retractable into the scolex (Figs. 3-10 and 3-11) (Witenberg, 1932). This tapeworm may attain a length of from 15 to 70 cm and be 2 to 3 mm wide with a light reddish yellow color. The body is in composed of 60 to 175 elliptical segments or proglottids (Boreham and Boreham, 1990). Each proglottid of this hermaphroditic tapeworm contains two sets of female reproductive organs and two sets of female reproductive organs with each set genital apertures opening medially on the lateral edges of the proglottid (Fig. 3-12). Proglottids (Fig. 3-12). two genital pores for fertilization, but no opening to allow eggs to escape. Because of these bilateral genital pores, Dipylidiumcaninum is in often referred to as the "double pored tapeworm." Eggs accumulate within each proglottid until the proglottid until the proglottid becomes packed like a ripe seed pod (Georgi, 1987). Gravid proglottids are creamy white, 10 to 12 mm in length and resemble cucumber seeds. Hence, Dipylidiumcaninum is in also referred to as the "cucumber seed tapeworm" (Griffiths, 1978). Gravid tapeworm" (Griffiths, 1978). Gravid tapeworm proglottids (Fig. 3-14), each of which contain from 5 to 30 hexacanth ova (Georgi, 1987). The terminal tapeworm proglottids are often passed singly in the feces (Griffiths, 1978). Since the tapeworm proglottids possess both circular and longitudinal smooth musculature (Chitwood and Lichtenfels, 1973), they have the ability to move about the cat's perianal region, on the feces, on the bedding or across any surface where they may be deposited (Griffiths, 1978). These proglottids will desiccate in the external environment. As they loose moisture, they shrivel up, often resembling uncooked rice grains (Boreham and Boreham, 1990). LIFE CYCLE: Due to its ease of infectivity, the life cycle of Dipylidiumcaninum is in perhaps recounted by veterinarians more than any other parasite. As mentioned previously, the hermaphroditic adult parasite is in found attached in the small intestine of the feline definitive host. The gravid terminal segments are passed in the feces of the cat. The larval stages of the cat flea (Ctenocephalidesfelis) savor these segments and will actively descend upon a freshly passed proglottid to eat it (Pugh, 1987). The flea larvae has mandibulate mouthparts which allow it to ingest the eggs of Dipylidiumcaninum. The adult flea, however, is in not able to ingest these proglottids due to its siphon-like mouthparts which restrict it to a totally liquid diet. Larvae of Ctenocephalidescanis, Pulexirritans, and the dog louse, Trichodectescanis, are also capable of serving as intermediate hosts for Dipylidiumcaninum. Within the intermediate host, the hexacanth embryo develops into a tailless cysticercoid. This is in the stage that is in infective to the feline definitive host. The ambient temperature determines the rate of development of the larval tapeworm. The flea becomes infected as a larva, however the hexacanth embryo does not develop to an infective cysticercoid until the adult flea has emerged from its pupal case. In response to the host's body temperature, development is in completed to the infective cysticercoid stage (Pugh, 1987). The flea may contain an average of 10 cysticercoid stage (Pugh, 1987). process (Georgi and Georgi, 1990). Venard (1938) experimentally infected a cat with fleas infected with Dipylidiumcaninum. He recovered tapeworms from the cat 23 days later. Hinaidy (1991) also reported the prepatent period to be 2 to 4 weeks. Growth of Dipylidiumcaninum within the definitive host is in dependent upon diet, age of the host, and health. CLINICAL PRESENTATION AND PATHOGENESIS: Adult tapeworms cause little harm or inconvenience to the feline definitive host unless they are present in large numbers. In cats with severe infections, convulsions and epileptiform seizures occasionally occur (Boreham and Boreham, 1990). Heavy infections in young animals can produce non-specific abdominal symptoms including constipation or diarrhea. The animal may exhibit an unthrifty, pot-bellied appearance. Intestinal obstruction may occur, however this is in rare. However, most client's bedclothes, or on the recently passed feces of the cat. DIAGNOSIS: Key morphologic features: Identification of egg packets and proglottids as those of Dipylidiumcaninum is in necessary for controlling this ubiquitous tapeworm. The client may irrefutably observe tapeworm. characteristic eggs packets on fecal flotation. Egg packets within proglottids are best demonstrated by taking a gravid proglottid and teasing it open in a small amount of physiologic saline or tap water to disperse the characteristic egg packets. Inspection with the naked eye or a hand lens is in usually sufficient for the identification of segments of Dipylidiumcaninum. The characteristic cucumber seed shape coupled with the double pored effect are pathognomonic indicators. Pet owners often find dehydrated, shriveled objects in the vicinity of their cat's resting places. These desiccated objects in the vicinity of their cat's resting places. will assume their former cucumber seed appearance. TREATMENT: The anthelmintic with the broadest spectrum of cestocidal activity is in praziquantel. A single oral or subcutaneous dose (5 mg/ kg body weight) of this anthelmintic eliminates 100% of both immature and adult Dipylidiumcaninum from cats. An alternative cestocide is epsiprantel administered in a single oral dose of 5.5 mg/kg of body weight. An important adjunct to the treatment of dipylidiasis in cats is in a vigorous flea control program. Whenever a dose of cestocidal medication is in administered or dispensed, the cat's owner should be informed of the acute potential for reinfection via the flea (or louse) intermediate host. EPIZOOTIOLOGY: Adult Dipylidium caninum parasitize the small intestine of many members of the Felidae and Canidae families. In addition to domestic cats and wild dogs (Boreham and Boreham, 1990). Boreham and Boreham (1990) state that almost nothing is in known of the epizootiology of Dipylidium caninum; however, Georgi and Georgi (1992) state that transmission potential is in a function of the density of the flea intermediate host. Hinaidy (1991) examined 9.134 fleas in Austria and found that 2.3 % of Ctenocephalidesfelis collected from cats and 1.2% of Ctenocephalidesfelis collected from dogs were found to be infected with cysticercoids of Dipylidiumcaninum. From Ctenocephalides canis collected from dogs, 3.1% were found to harbor cysticercoids. Fleas harbored anywhere from 1 to 162 cysticercoids with a mean of around 8 per infected flea. Male fleas tended to be infected slightly more often than female fleas, but they tended to harbor fewer cysticercoids. a Danish survey revealed a higher prevalence o Dipylidiumcaninum in backyard cats, probably due to the ideal conditions for the survival of the kittens (Engback et al., 1984). In the Republic of South Africa, Dipylidiumcaninum is in marginally more common (24%) in adult cats and is in the most common helminth in juvenile cats (21%) (Baker et al., 1989). Uga and Yatomi (1992) reported that a survey of cats in Japan revealed that there were almost no cases where cats were infected with both with Dipylidium caninum and Spirometraerinaceieuropaei prevented the development of Dipylidium caninum through some form of competition. HAZARDS TO OTHER ANIMALS: Due to environmental transmission of fleas and the ease of ingestion during the grooming process, once Dipylidiumcaninum is in diagnosed in any pet in a household, all cats and dogs within that environment should be treated. HAZARDS TO HUMANS: Veterinarians should be aware of the public health significance potential of Dipylidiumcaninum. If fleas containing the infective cysticercoid stage are ingested by a human, patent infections with this tapeworm may occur. Children are at an increased risk of infection owing to their close association with the family pet, and therefore, their increased risk of accidentally ingesting a flea. Although human infection with Dipylidiumcaninum is in not common, neither is in it a rare event. Dipylidiumcaninum is in mildly pathogenic, producing nocturnal irritability, anorexia, and weight loss in infected children. Diagnosis is in by finding the characteristic proglottids in the feces or in the perianal area. Most human cases, however, are asymptomatic for the patient, although they can be very traumatic for the parent who might come across segments while changing a diaper or in the child's under garments or pajama. It must be emphasized that this condition is in a rarity. The adult females of the human nematode parasite, Enterobiusvermicularis, that migrate out of the anus of infected children may be easily confused with the passed proglottids of Dipylidium by the untrained observer (Georgi and Georgi, 1992). CONTROL/PREVENTION: Rigorous on-animal and environmental flea control programs coupled with an effective cestocidal agent must be implemented to control Dipylidiumcaninum in the feline. It is in also necessary to be certain to develop programs that handle all the canine and feline pets in the household. REFERENCES: Arundel JH. 1970. Control of helminth parasites of dogs and cats. Austral Vet J 46:164-168. Baker MK, Lange L, Verster a, van der Plaat S. 1989. a survey of helminths in adult and juvenile cats. J So Afr Vet Assoc 60:139-142. Bearup AJ. 1960. Parasitic infection in cats in Sydney, with special reference to the occurrence of Ollulanus tricuspis. Austral Vet J 36:352-354. Boreham RE, Boreham R helminthic parasites of cats in Calcutta and the relation of cats to human helminthic infections. J Parasitol 20:213-227. Chitwood M, Lichtenfels JR. 1973. Identification of parasitol 32:407-519. Clarkson MJ, Owen LN. 1959. The parasites of domestic animals in the Bahama Islands. 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