

Oswaldofilaria medemi n. sp. (Nematoda: Filarioidea),
from the smooth-fronted caiman, *Paleosuchus trigonatus*
from Colombia

by

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(Received for publication May 28, 1979)

Abstract: A filarial worm, *Oswaldofilaria medemi* n. sp., obtained from the thoracic wall of an adult Colombian caiman, *Paleosuchus trigonatus* (Schneider, 1801) is described. The new filaria differs from all other species of the genus by the long oesophagus and by differences in size and shape of the spiculae in the male. Microfilariae could not be found in the blood of six *P. trigonatus*.

Few filarid-like worms are known from Crocodylidae. In Asia, *Micropleura vivipara* of the family Dracunculidae was described from gaviales. In Brazil, *M. vazi* was described by Travassos (1933) from *Caiman sclerops* and *Oswaldofilaria bacillaris* was found in *Melanosuchus niger* by Molin (1858) and in *Caiman sclerops* by Travassos (1933). A distinct species of *Oswaldofilaria* was recently obtained from Colombian *Paleosuchus trigonatus* crocodillians.

Oswaldofilaria was separated from the genus *Filaria* by Travassos (1933) based on morphological differences in the buccal capsule, oesophagus, caudal extremity of worm, ovjector, spicules, caudal papillae of male and position of the vulva.

MATERIAL AND METHODS

One intact male, three intact females and three slightly damaged females of a new species of filaria were recovered from the thoracic wall of an adult smooth-fronted male caiman *Paleosuchus trigonatus* (Schneider, 1801). The recovered worms were washed in normal saline solution and preserved in 70% alcohol with 25% glycerol. Clearing was done in lactophenol. The cephalic structures of female paratypes were studied by the method described by Anderson (1958). Measurements were made on preserved, cleared specimens or on camera lucida drawings. The blood of the caiman was examined by Knott's (1939) concentration method but no microfilariae were found. In the following description all measurements are in mm.

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RESULTS

The worms found in *Paleosuchus trigonatus* belong to the genus *Oswaldofilaria* Travassos, 1933. Because of certain characteristics, this new species has been named *Oswaldofilaria medemi* n. sp., in honour of Dr. F. Medem, who for the first time collected *P. trigonatus* in Colombia.

Description: The specimens collected from the Colombian caimans showed the following characteristics: body cuticle with fine striations; stoma simple with a small but distinct buccal capsule; oesophagus long and clearly divided into an anterior short muscular part, and long broad glandular posterior part (Fig. 1); head blunt; caudal extremity digitiform in both sexes; lateral alae absent. Females are opistodelphic and viviparous: ovijector long; vulva placed a short distance behind termination of glandular oesophagus. Male with caudal papillae and spicules dissimilar and unequal.

Male: Measurements are given in the Table 1. The cuticle consists of three layers; outer layer with transverse fine striations, medial layer without striations, and smooth inner layer with fine longitudinal striations. Cephalic papillae similar to those of the female. The nerve ring is clearly visible (Fig. 1). The tail is coiled strongly. The genital systems is looped, filling pseudocoelomic space and extending to terminal portions of worm; ejaculatory duct is difficult to distinguish. Spicules are dissimilar; left spicule longer than right; spicule ratio 4.0: 1; left spicule lancet-shaped at end and with groove on ventral surface; right spicule falciform with minute lancet-shaped tip (Fig. 2); gubernaculum absent. Cloaca 0.154 from posterior end of body. Caudal papillae are sessile and equal in size; three pairs precloacal, one pair cloacal and two pairs postcloacal (Fig. 3).

TABLE 1

Measurements of Oswaldofilaria medemi n. sp.: Holotype male (1), allotype female (2), paratype females (3), and *O. bacillaris* male (4), females (5). (All measurements in mm)

	(1)	(2)	(3)	(4)	(5)
Total length	24	49	47-50	20	45
Width at level of middle body	0.20	0.25	0.25	0.21	0.25
Anterior end to nerve ring	0.298	0.425	0.421-0.426	0.36	0.6
Anterior end to vulva	—	16.8	16.0-17.4	—	13-21
Anus to tail tip	0.154	0.296	0.290-0.299	0.14	0.35
Greatest width, buccal cavity	0.005	0.007	0.007	0.016	0.025
Length, buccal cavity	0.012	0.016	0.015-0.016	0.008	0.015
Length, muscular oesophagus	0.238	0.535	0.529-0.539	0.65	1
Length, glandular oesophagus	5.9	12.5	12.3-12.6	4.6	8
Total length, oesophagus	6.1	13.0	12.8-13.1	5.3	9
Length, longer spicule	0.366	—	—	0.38	—
Length, shorter spicule	0.092	—	—	0.18	—

Female: Allotype and five paratypes (range of measurements of paratypes in parenthesis). There are four pairs of submedian papillae radiating from the oral

opening; the four innermost are smaller than the outermost papillae (Fig. 4). Amphids are tiny and in line with the outermost papillae. Vagina vera is muscular; ovjector bulbous, usually directed posteriorly (Fig. 5). Convoluted, paired uteri extend to 0.0087 (0.075-0.092) from the anterior extremity (Fig. 6), and 0.050 (0.048-0.088) from the posterior extremity of body (Fig. 7). Uteri extend throughout most of the body and are filled with larvae. The coiled ovaries are confined to hindbody and extend to level of anus. Eggs are oval-shaped 0.125 x 0.108, with thin smooth shells (Fig. 8). Microfilariae dissected from the vagina and measured in cotton-blue lactophenol preparations are sheathed, with anterior end rounded, tail tapered, short cephalic space, and total length (without sheath), 0.086-0.092. Maximum width 0.0053-0.0054; nerve ring located 0.013-0.017 behind head; excretory pore 0.049-0.051; anal pore 0.020-0.024. Number of nuclei anterior to nerve ring, 29-31 (Fig. 9).

Host: *Paleosuchus trigonatus* (Schneider, 1801)

Habitat: Body cavity, thoracic wall.

Locality: Cachirri, Jacaré (Departamento de Meta), Colombia

Specimens: To be deposited in U.S.N.M. Helm. Coll.

DISCUSSION

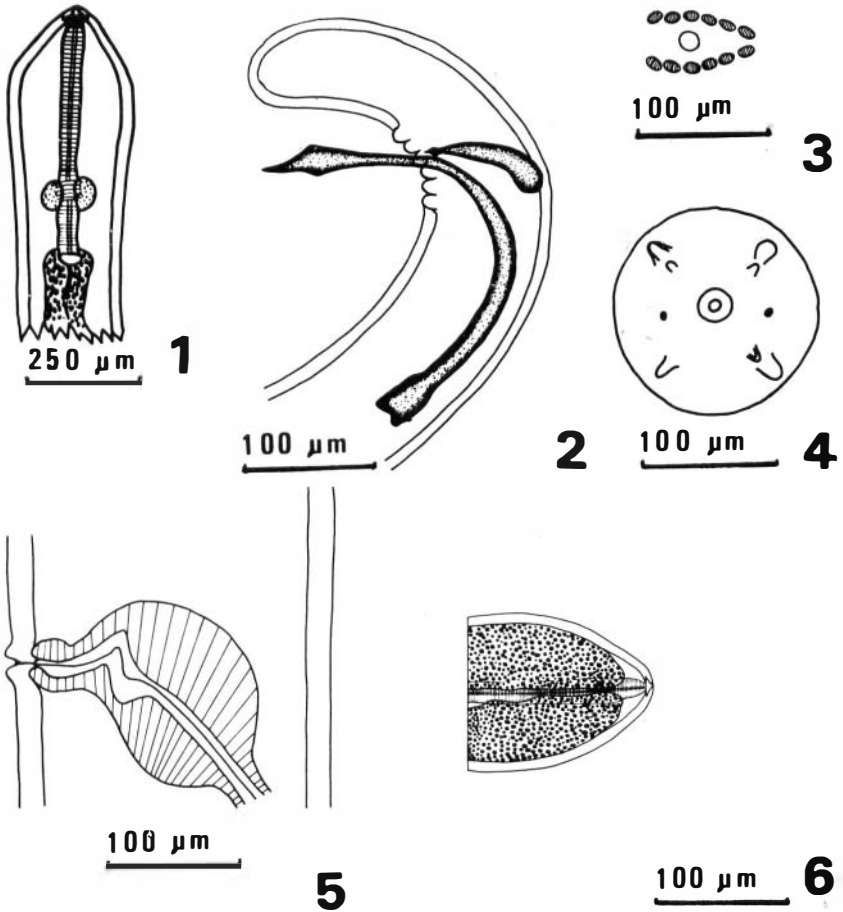
The only filarial parasite of the family Filariidae, described from the order Crocodylia, is *Oswaldofilaria bacillaris* (Molin, 1858), Travassos, 1933, formerly assigned to the genus *Filaria*. *O. medemi* differs from *O. bacillaris* in having; a) a different number and position of caudal papillae in the male, 3 pairs precloacal, 1 pair cloacal, 2 pairs postcloacal, as opposed to 2 precloacal, 3 cloacal and 2 postcloacal in *O. bacillaris*; b) a different shape of the spicules, a spicule ratio of 4.0: 1 versus 2.1: 1 in *O. bacillaris*; c) a different position of the nerve ring and the vulva; d) a narrower buccal cavity; and e) shorter muscular oesophagus (Molin, 1858; Travassos, 1933).

Four other species of *Oswaldofilaria* are known and differ from *O. medemi* by the following characteristics. *O. brevicaudata* (Rhodhain & Vuylsteke, 1937) Freitas & Lent, 1937, was formerly assigned to the genus *Breinlia*, recovered from Brazilian and Mexican lizards (*Iguana iguana*, syn. *I. tuberculata*). The buccal capsule in the male is absent. An atrophied vulva is present, located 12.75 from the anterior end. The spicule ratio is 1.9 to 2.2:1. Caudal papillae differ in number and arrangement: 4 pairs precloacal, 1 pair cloacal, 3 pairs postcloacal, and often an additional unpaired precloacal papilla (Freitas & Lent, 1937).

O. carinii (Vaz & Pereira, 1935) Barus & Sonin, 1968 originally placed in the genus *Macdonaldius* and later assigned to the genus *Piratuba*, was recovered from a Brazilian snake (*Elapomorphus tricolor*). The glandular part of the oesophagus appears to be absent. The spicular ratio is 1.6 to 1.9:1. There are 3 pairs precloacal and 5 pairs postcloacal papillae and the cephalic papillae are absent (Barus & Sonin, 1968; Vaz & Pereira, 1935).

O. chlamydosauri (Breinl, 1913) Johnston & Mawson, 1943, was formerly assigned to the genus *Foleyella*, recovered from Australian agamids (*Chlamydosaurus kingii*, *Amphibolurus barbatus* and *A. muricatus*). Spicule ratio is 1.6: 1. There are 5 pairs precloacal, 3 pairs postcloacal and 2 pairs caudal papillae near the tip of the tail.

The buccal capsule is absent. The male tail bears two small papillae near to the tip of the tail (Johnston & Mawson, 1943). The unsheathed microfilariae



Oswaldofilaria medemi n. sp.

- Fig. 1. Ventral view of anterior end of male.
- Fig. 2. Lateral view of posterior end of male with spicules.
- Fig. 3. Diagrammatic representation of the arrangement of caudal papillae in the male.
- Fig. 4. Front view of female head with cephalic papillae.
- Fig. 5. Lateral view of ovijector.
- Fig. 6. Ventral view of anterior end of female.

described by Breinl *et al.* (1913) are very similar to the sheathed larvae dissected from *O. medemi*.

O. pfugfelderii (Frank, 1964) Barus & Sonin, 1968 was formerly assigned to the genus *Macdonaldius*, also recovered from an Australian agamid lizard (*Physignathus leseuerii*). The spicule ratio is 2.4: 1. There are 4 or 5 pairs precloacal, 3 pairs postcloacal and 1 pair of caudal papillae. The caudal papillae are

located 0.025 from the tip of the tail. The sheathed microfilariae described by Frank (1964) are nearly twice as long as those of *O. medemi*.

O. medemi differs from all other species in the genus by 1) the greater total length of the oesophagus; 2) the different size of the shorter spicule; 3) the spicule ratio; and 4) the shape of both spicules.

The square cuticular shield, surrounding the cephalic papillae as a characteristic of the genus mentioned by Anderson (1968), could not be distinguished.

The blood of six other caimans examined by Knott's concentration method (1939) did not show microfilariae. Although the vector is unknown, F. Medem (pers. communication) found tabanids *Tabanus (T.) fervens* (L.) and *T. (N.) modestus* (Wied) feeding on the snout of *P. trigonatus*.

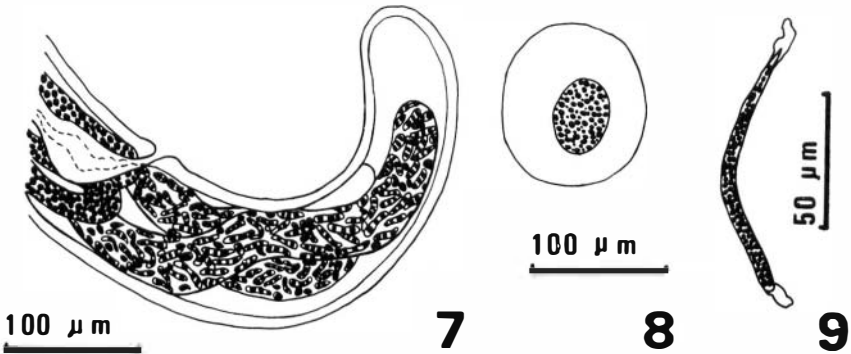


Fig. 7. Lateral view of posterior end of female.

Fig. 8. Egg.

Fig. 9. Microfilaria dissected from vagina.

ACKNOWLEDGEMENTS

The author is especially grateful to Prof. Dr. R. C. Anderson and the late Prof. Dr. J. J. C. Buckley for advice and numerous suggestions; to Dr. J. H. Esslinger and Prof. Dr. J. F. Kessel for their help in searching the literature and to Dr. Elizabeth S. Grose for reading the manuscript.

RESUMEN

Se describe una filaria, *Oswaldofilaria medemi* n. sp., aislada de la pared torácica de un caimán adulto de Colombia, *Paleosuchus trigonatus* (Schneider, 1801). La filaria difiere de todas las demás especies del género por su esófago largo y por diferencias en el tamaño y forma de las espículas del macho. No se encontró microfilarias en la sangre de seis *P. trigonatus*.

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