

Syphacia caudibandata sp. N (Nematoda: Oxyuridae) from a Lagomorph host *Lepus capensis* Linn in Karachi, Sindh, Pakistan

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SUMMARY: *Syphacia caudibandata* was found in the gut of the common hare *Lepus capensis* (Linn.) in Karachi, Pakistan. The new species is characterized by having a typical caudal region provided with transverse band and bead like structures placed at well-proportioned spaces in the females and one or two cuticular mamelons and relatively short spicules in males. Scanning micrographs of the cuticle show a typical cuticular structure over the mid dorsal body surface. This is the first time that the genus *Syphacia* has been found in the host, *Lepus capensis*, in Pakistan.

Key words: *Syphacia caudibandata*, *Lepus capensis*, typical caudal region, cuticular mamelons.

Pakistan'ın Karaçi (Sindh) Bölgesinde Lagomorf Bir Konaktan Elde Edilen *Syphacia caudibandata* sp. N (Nematoda: Oxyuridae)

ÖZET: *Syphacia caudibandata* sp. Pakistan'ın Karaçi kentinde yakalanan yabancı tavşan *Lepus capensis* (Linn.)'in midesinde saptanmış ve tanımlanmıştır. Yeni tür, dişilerdeki iyi orantılı boşluklarda yerleşmiş enine bantlar ve arpacık benzeri yapılar bulunan tipik bir kuyruk bölgesine sahip olması, erkeklerdeki bir veya iki kütikular mamelon ve nispeten kısa spiküllerin bulunması ile karakterize edilmiştir. Kütikülün scanning elektron mikroskop fotoğrafları dorsal yüzeyin ortasının üstünde yer alan tipik kütikular yapıyı göstermiştir. Bu çalışma, Pakistan'da *Lepus capensis*'de *Syphacia* cinsinin bulunduğunu gösteren ilk çalışmadır.

Anahtar Sözcükler: *Syphacia caudibandata*, *Lepus capensis*, tipik kuyruk bölgesi, kütikular mamelon

INTRODUCTION

In Pakistan rabbits and hares (order Lagomorpha) are represented by two families, Leporidae and Ochotonidae. Each family comprises of a single genus having three species in each: *Lepus nigricollis* (Indian or desert hare); *L. capensis* (Cape hare); *L. arabis* (Arabian hare) and *Ochotona rufescens* (Afghan or Collard pika); *O. royle* (Royals pika) and *O. macrotis* (Large eared pika). These species have not been much studied, particularly with reference to damage they cause to the crops and tend to communicate diseases to humans, livestock and pet animals. Therefore studies on helminth parasites of the common hare *Lepus capensis* are

attempted, as no earlier report exists in the literature in Pakistan.

Syphacia caudibandata sp.n. is second to be reported from Pakistan with a new host record. Species of the genus reported other than the common hare *Lepus* sp. is *S. lahorea* Akhter, 1955 from the squirrel *Funambulus pennanti argentescens* in Pakistan.

MATERIALS AND METHODS

In addition to a rabbit caught from University of Karachi Campus area, ten rabbits were purchased from a local market in Karachi at different intervals during June to November, 2000. Out of the 11 rabbits examined, three were found infected with oxyurid nematodes, 100 male and 5 female specimens were recovered from the lumen of the small intestine of the infected hosts.

The nematodes were washed with distilled water and preserved in a solution of 5 parts glycerin + 95 parts 70% alcohol. For detailed examination and study the specimens were placed under a drop of Lactophenol on temporary mounts. Measurements are taken length by width, in millimeters with means followed by minimum and maximum. Specimens are deposited in the senior author's collection. Light Photomicrographs were taken with the aid of a Nikon microscopic camera, while Scanning photomicrographs were prepared with the courtesy of Biological Research Centre, University of Karachi. No's to the specimens are given in parenthesis.

Syphacia caudibandata sp.n. (Figures 1-8)

Host : *Lepus capensis* (Cape hare)

Site in host : Small intestine

Type locality : University of Karachi

Other locality : Liaquat Market, Karachi

Number of hosts examined : 11

Number of hosts infected : 03

Number of specimens recovered: 100 male & 5 female

Mouth bounded by three membranous lips, cervical alae absent, vestibule present, esophagus club-shaped with a posterior bulb containing a valvular apparatus and separated from the rest by a constriction.

Male with one/two cuticular mamelons on the ventral body surface, posterior extremity bent ventrally and coiled, body cut away ventrally some distance behind the cloaca, suddenly narrows and ends in a pointed tail, caudal alae not present, two pairs of sessile-anal papillae present near the cloaca in addition to a pair of large post-anal pedunculated papillae. Spicule single, relatively short, accompanied by membranous gubernaculum directed transversely.

Female tail-end pointed, vulva in the anterior region of the body, behind the excretory pore communicating by a short vagina, frequently protruded with a cuticle-lined ovjector remarkable for the thickness of its muscle coat, uterus single, very long, receptacle seminis parallel and narrow, two ovaries oviparous, tail considerably long, ornamented with typical band and bead like structures.

MALE: Description based on a Holotype and twenty-four paratypes.

Head diameter 0.035 (0.02-0.05), the entire body length is 3.95 (2.75-4.75), maximum width of the body 0.32(0.22-0.5) position of nerve ring is 0.13 (0.12-0.14) from the anterior extremity, the excretory pore is not conspicuous due to heavy

musculature, esophagus (0.54) 0.4-0.69 long and 0.063 (0.026-0.1) wide where as the length of the esophageal bulb is 0.21-0.28 and the width is 0.21 (0.2-0.22), the number of cuticular mamelon varies; in some specimens there is only one and in others there are two mamelons. Anterior mamelon is 1.2 (1.1-1.4) from anterior extremity and the length of the anterior mamelon is 0.03 (0.02-0.05), the posterior mamelon is 0.044 (0.039-0.05) in length and distance from anterior extremity is 1.6 (1.5-1.7).

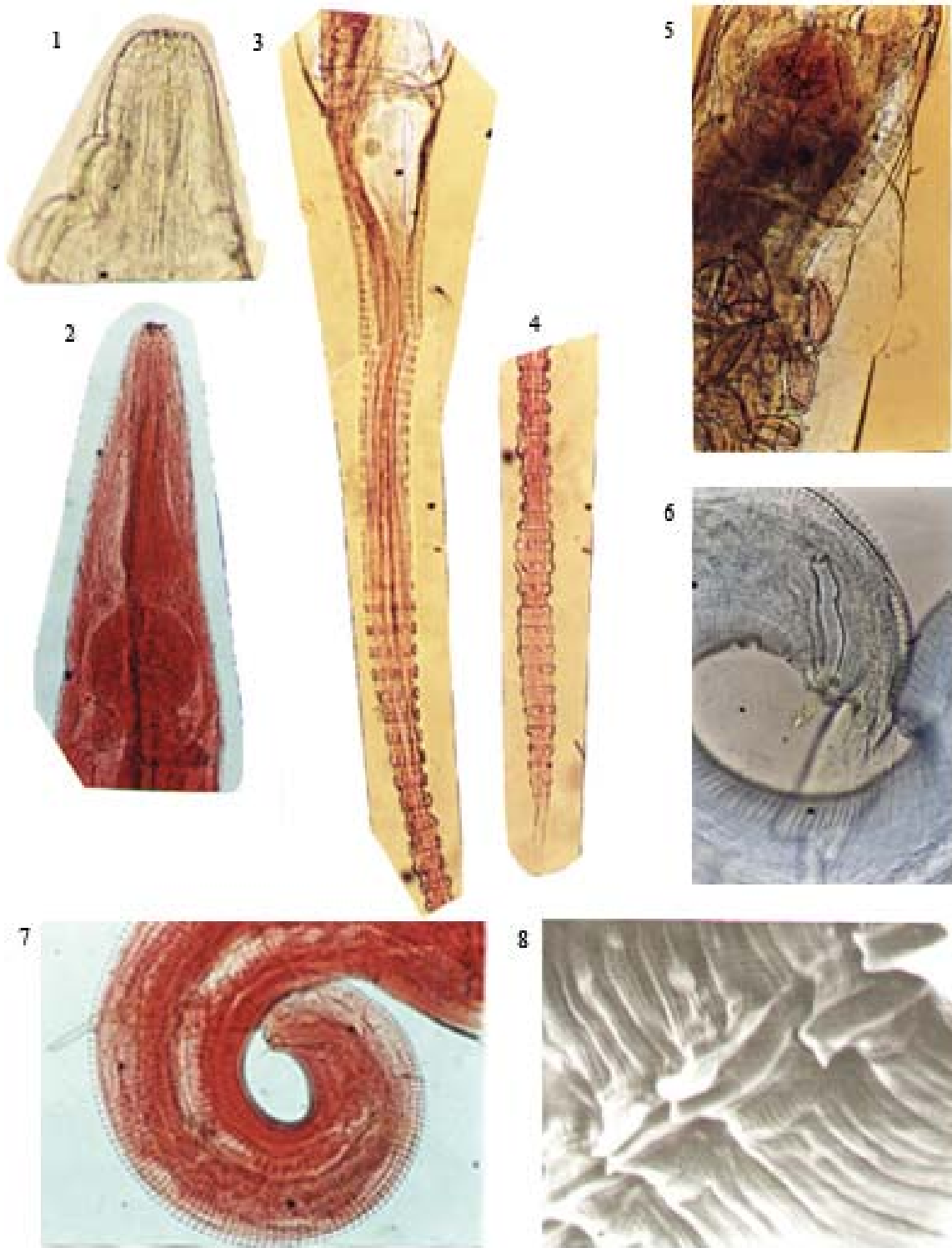
In the specimen which have only one mamelon, the length of the mamelon is 0.05 (0.04-0.09) and it is situated at a distance of 2.25 (1.8-3.7) from the anterior extremity. There are two pairs of pre-anal papillae and one pair of post-anal pedunculated papillae. The spicule is single relatively short 0.12 (0.1-0.15) with slight constriction in the anterior region while it becomes relatively narrower from below the mid region. Anterior distal portion of the spicule is broader as compared to the posterior proximal portion which is pointed, (Figure 6) while the gubernaculum is membranous measures 0.09 (0.08-0.1) in length. The tail is 0.25 (0.22-0.28) in length and coiled (Figure 7).

FEMALE: Description is based on an allotype and 4 paratypes.

Body is relatively stout, tapering at both ends. The entire length of the body is 5.7 (4.25-7.15) and the maximum width at the anterior two-third is 0.6 (0.4-0.76). The head diameter is 0.02 (0.06-0.08), cervical alae absent while lateral alae are present. The nerve ring is 0.13 (0.1-0.16) from the anterior extremity. The vulva opening is 1.02 (1.1-1.17) from anterior end. Length of the cylindrical portion of the esophagus is 0.5 (0.46-0.55), the esophageal bulb is 0.2 (0.15-0.25) long and 0.16 (0.12-0.2) wide. The excretory pore lies just behind the esophageal bulb.

The tail of the female is very long measuring about one-third of the body length, 1.66 (1.1-2.3) in length. Some distance below from the anal opening, the cuticle appears to be striated (Figure 3) and slightly typical annulations are obvious. These annulations appear to form bands on the tail and have bead like structures at their lateral sides (Figure 3). A little distance ahead of the middle region of the tail, the cuticular bands are more pronounced with bead like structures. At the distal end of the tail the bands appear to be more regular, increase in size with more prominent bead like structures placed at harmonious intervals / spaces (Figure 4). The bands just disappear at the posterior most part of the tail, which ends, into a narrower blunt end.

The eggs are long elliptical, with finely pitted shell measuring (0.1 x 0.4) in size (Figure 5).



Figures: 1. *Syphacia caudibandata* sp.n. Female. Anterior region enlarged, lateral view 100x.; 2. Anterior-esophageal region of female, lateral view 50x.; 3. Anal region of female, lateral view 50x.; 4. Distal portion of the tail, lateral view 50x.; 5. Portion of uterus and vulva opening, lateral view 100x.; 6. Caudal extremity of a paratype male with a cuticular mamelon, lateral view 100x.; 7. Caudal extremity of a paratype male, coiled, lateral view 50x.; 8. Scanning electron micrograph, showing typical central cuticular structure with transverse cuticular striations.

DISCUSSION

Species of the genus *Syphacia* (Seurat, 1916) are cosmopolitan and important from the view point that these, beside, small mammals, also infect humans. Route of infection may quite probably be contamination through faecal droppings and hand to mouth contamination.

A single species *Syphacia lahorea* Akhter, 1955 have been reported from *Funambulus penanti* in Lahore. Present species is the second but first from a Lagomorph-host. Other species reported are from countries in Asia, Africa, Europe and Australia, (Yamaguti, 1961).

Present specimens although appear closer to species reported from rats and mice (Rodentia) but be can differentiated by having only one or hardly two cuticular mamelons instead of usual presence of three, absence of cephalic, cervical, lateral and caudal alae in male and presence of lateral alae in female.

The cuticle in light microscopic studies appear to be simply striated, but with the electron microscopic examination the cuticle not only appears to be striated but there is a central typical cuticular structure evident right from the region below the lips upto the anal region (Figure 8).

Gubernaculum lies more or less parallel to the spicule and its length ratio varies from (0.08-0.1), spicule is relatively short (0.1-0.15). Two pairs of precloacal papillae are present and a bunch like arrangement of caudal papillae surrounding the anal opening are evident while some distance below the cloacal opening lies a pair of post-cloacal papillae (0.09-0.1) away from the anal opening.

The female specimens are typical in having tail region provided with regularly placed bands, accompanied by bead-like structure at their lateral ends. These bands and beads appear a little distance below the anal opening. Initially these are less conspicuous, later become pronounced in form of bands along with lateral bead like structures, distally these bands become more pronounced but the distal most end becomes quite narrow and ends in a roughly conical end, this smaller portion is without any band like structure (Figure 4).

This typical sort of structure has not been reported in earlier described species of the genus. Therefore present specimens are designated as *Syphacia caubidandata* sp. n., the species name refers to the band-like structures present on the female tail.

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