ON SOME NEMATODES OF BIRDS FROM INDIA
PART II. SPIRURIDAE AND HEDRURIDAE

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ABSTRACT: The genus Ascarops belonging to the family Spiruridae has been reported from a carnivore bird, Accipiter badius. This is the first record of this genus from birds. It differs from other species in the absence of a lateral flange and in having 6 pairs of pedunculated papillae. Under the family Hedruridae, two new species Excisa curvata and Viguiera terpsiphonei are reported along with the key to the species of their genera. Excisa curvata n. sp. differs from all the known species in body length, size and ratio of spicules. The presence of sessile papillae at the tip of the tail brings the species closest to E. buckleyi but there being two pairs in the former while four pairs in the latter. Viguiera terpsiphonei n. sp. comes closest to V. letperi and V. dorsti but differs from both of them in the shape of head and in the number and arrangement of the cloacal papillae. Hadjelia sp. based on a single male specimen is also reported from India.

SPIRURIDAE OERLEY, 1885
Ascaropsinae ALICATA & McINTOSH, 1933
Ascarops van BENEDEN, 1873

Members of the subfamily Ascaropsinae exclusively occur in mammals, and the species of the genus Ascarops are known to occur in members of the family Suidae. However, CHABAUD (in litt.) informed the present authors that Ascarops africana has recently been collected from a carnivore mammal, Herpestes ichneumon. The authors found a single male of Ascarops from a carnivore bird, Accipiter badius. This worm was in no way abnormal morphologically and showed no sign of its being in an unnatural host. It was collected from beneath the lining of the gizzard which is a favoured location for the spirurids in birds. It is interesting to note that the present species of Ascarops reached this normal site of infection for spirurids even though the parasite is usually found in a different class of vertebrate. However, it is possible that Ascarops occurs in both birds and mammals; there are many spirurids which do occur in both. These two instances obviously indicate that the species of Ascarops are not very host-specific and can develop in hosts belonging to various groups of vertebrates.

The present species of Ascarops appears to be new but since only a single male was available, it has been described here as Ascarops sp. It is also the first record of Ascarops from birds and second record of the genus from India. The other species known from India is A. strongyliina. The present specimen is unique in being without a lateral flange and in having six pairs of pedunculated papillae. The generic diagnosis of Ascarops should accordingly be amended to include these characters.

Ascarops sp.
(Plate I, Figs. 1 & 2)

Description: Body length 11.8, width 0.26, straight and cylindrical. Mouth terminal, cuticularized, provided with two lateral lips and two teeth. Cuticle transversely striated, but near caudal alae adorned with large plaques. Lateral flange absent. Buccal capsule cylindrical, 0.10 deep, provided with spiral cuticular thickening distinctive of the genus. Cervical papillae two, very

Received for publication March 1, 1971
All measurements are in millimeters unless otherwise stated.
small, asymmetrically placed at 0.19 and 0.43 from anterior end respectively. Oesophagus distinctly divided into muscular and glandular portions, measuring 0.20 and 3.00 respectively. Nerve ring and excretory pore at 0.34 and 0.38 respectively from anterior end. Rectum simple. Cloacal aperture with a distinctly serrate cuticular crown. Tail alate, 0.25 long, conical and rounded at tip. Caudal alae asymmetrical covering tail ventrally, provided with small rays and plaques and supported by six pairs of pedunculated papillae, 4 pairs of precloacals (somewhat irregularly arranged on one side), and 2 pairs of postcloacals of which one pair lies immediately behind cloaca. A group of 5 pairs of sessile papillae at tip of tail. Testis single, outstretched. Spicules very unequal, dissimilar; right one stout, 0.47 long; left one very long, delicate, more sharply pointed, measures 2.35. Spicule ratio approximately 1:5.

Host: Accipiter badius (GMELIN)
Site: Beneath the lining of the gizzard
Locality: Aligarh, U. P.

HEDRURIDAE RAILLIET, 1916
Habronematinae CHITWOOD & WEHR, 1932
Hadjelia SEURAT, 1916
Hadjelia sp.
(Plate I, Figs. 3-6)

Description: (Based on a single male). Body 6.50 long, 0.15 wide, attenuated anteriorly and expanded at posterior end with caudal alae. Head provided with appendages, mouth terminal. Cuticle transversely striated. Buccal capsule 0.054 deep, cylindrical and slightly cuticularized. Cervical papillae at 0.19 from anterior end. Nerve ring and excretory pore at 0.20 and 0.22 from anterior end respectively. Oesophagus long, divided into a short anterior muscular portion 0.43 long and a long glandular portion measuring 1.20. Tail 0.11 long, tapering to a bluntly rounded tip. Caudal alae broad, supported by pedunculated papillae; 4 pairs of pre- and 3 pairs of postcloacal papillae; 3 pairs of sessile papillae at tip of tail. Spicules similar, slender and very unequal, ending in a sharply pointed tip; proximal end of left spicule cephalated; left one 1.60, right one 0.30 long. Spicule ratio approximately 1:5.

Host: Merops orientalis LATHAM
Site: Beneath the lining of the gizzard
Locality: Aligarh, U. P.

Excisa GENDRE, 1928

The genus Excisa at present includes the following four species: E. excisa (MOLIN, 1860) GENDRE, 1928; E. dentifera (JOHNSTON and MAWSON, 1941) CHABAUD, 1958; E. khalili (EZZAT, 1945) and E. buckleyi ALI, 1961. With the exception of E. khalili reported from a rhinoceros, all the above species are from avian hosts. CHABAUD (1958) does not think rhinoceros to be the host of E. khalili. He is of the opinion that its material was probably misplaced and Ciconia might be its correct host. Excisa buckleyi from White Necked Stork, Dissoura episcopus is the only species of the genus reported from India.

CHITWOOD and WEHR (1933) suppressed the genus Excisa as a synonym of Hadjelia SEURAT, 1916 but it has rightly been revalidated by CHABAUD (1958). Excisa clearly differs from Hadjelia in the structure of the lip region and in the presence of a gubernaculum.

During the course of the present study a new species of Excisa was found and is described hereunder as E. curvata n. sp.

Excisa curvata n. sp.
(Plate I, Figs. 7-9)

Description: (Based on two males). Body 15 long and 0.30-0.31 wide, tapering at both ends. Anterior end broader than posterior one. Cuticle transversely striated. Cervical papillae located above nerve ring, at 0.20-0.24 from anterior end. Mouth terminal, surrounded by 2 deeply notched lips. Dorsal and ventral interlabia present. Buccal capsule long, cylindrical and well cuticularized, measuring 0.54. Nerve ring surrounding oesophagus at 0.28 from anterior end. Oesophagus cylindrical, narrow anteriorly but slowly widening posteriorly. Muscular and glandular portions of oesophagus 0.36-0.40.
PLATE I, Figs. 1 & 2 Ascarops sp. 1-Head end, 2-Male tail. Figs. 3-6 Hadjelia sp. 3-Head end, 4-Head end, enlarged, 5-Cardia region, 6-Male tail. Figs. 7-9 Excisa curvata n. sp. 7-Head end, 8-Male tail, 9-Spicules.
and 3.74–3.93 long respectively. Excretory pore obscure. Tail 0.20–0.31 long, curved ventrally, provided with alae, adorned with scales; tail tip rounded. Caudal alae supported by pedunculated papillae; 4 pairs of pre- and 2 pairs of postcloacals; 2 pairs of sessile papillae present near tip of tail. Testis coiled and reflected, extending through 4/5th of body. Spicules slender, very unequal, similar, their proximal ends slightly broadened; left one 1.73–1.89 and right one 0.53–0.57. Spicule ratio 1:3.3. Gubernaculum funnel-shaped.

Host: Accipiter badius (Gmelin)
Site: Beneath the lining of the gizzard
Locality: Aligarh, U. P.

Relationship: Excisa curvata n. sp., differs from all the known species in the body length, and size and ratio of the spicules. In having sessile papillae at the tip of tail it is closest to E. buckleyi but differs from it in the number of these papillae (E. buckleyi has 4 pairs of sessile papillae) and in having the buccal capsule twice as long as in E. buckleyi.

Key to species of Excisa
1. Paired sessile papillae at tip of tail present .................................................. 2
2. Paired sessile papillae absent .......................................................... 3
2. Two pairs of sessile papillae at tip of tail ........................................ curvata n. sp.
3. An unpaired sessile papilla present ........................................................ excisa
4. An unpaired sessile papilla absent .................................................. 4
4. Males small, about 10 long. dentifera
Males large, about 16 long. khalili*

Viguiera Seurat, 1913

At present the genus Viguiera includes 7 species, V. euryoptera (Rudolphi, 1819) Seurat, 1913; V. leiperi Ali, 1954; V. buckleyi (Yeh, 1954) Chabaud, 1957; V. osman­hilli (Yeh, 1954) Chabaud, 1957; V. viduae Chabaud, 1960; V. dorsti Chabaud, 1960 and V. vulvoinflata (Molin, 1860) Chabaud, 1960. Of these species, V. leiperi has been described from Hyderabad, India, and the type species, V. euryoptera is of common occurrence in this country.

Two males and a female of the bird, Paradise Flycatcher were examined for nematodes in May and June of 1966. The female bird was found to harbour 2 males and 4 females of a nematode beneath the lining of the gizzard. Upon microscopic examination they were found to represent a new species of Viguiera.

Viguiera terpsiphonei n. sp.
(Plate II, Figs. 1–7)

Description: (Based on 2 males and 4 females). Body thin, filiform, tapering towards posterior end. Head rounded, provided with appendages. Cephalic alae absent. Cuticle thin, with fine transverse striae which continue only up to level of nerve ring. Buccal capsule narrow and cylindrical, 0.02–0.03 deep. Cervical papillae present at level of nerve ring. Nerve ring and excretory pore at 0.15–0.17 and 0.14 from anterior end respectively. Oesophagus spiruroid. Anterior region muscular and broader up to the length of nerve ring then narrowing down and becoming less muscular and again expanding to an enlarged portion. Cardia present. En face view hexagonal, provided with 8 horn-like processes, 2 in each submedian position. A papilla-like cuticular structure projects dorsally and ventrally. Two cup-shaped amphids are present laterally. Mouth slit-like, bordered by 4 plates with fine ridges and 2 lips each having 3 papillae at its outer margin.

Male: Body length 7.30–8.10, width 0.11–0.12. Muscular and glandular portions of oesophagus 0.25–0.26 and 1.67–1.72 long respectively. Tail 0.168, with symmetrical alae, spirally coiled, conical with rounded

* Excisa khalili was considered a synonym of Excisa excisa by Chabaud (1958) but Ali (1961) has rightly re-validated it on the basis of its smaller spicules and spicule ratio and in the absence of a sessile pre-anal papilla.
PLATE II, Figs. 1-7 Viguiera terpsiphonei n. sp. 1—Oesophageal region, 2—Head end, 3—En face view, 4—Female tail, ventral, 5—Female tail, lateral, 6—Male tail, lateral, 7—Male tail, ventral.
tip. Caudal alae supported by pedunculated papillae, 10 pairs of pre- and one pair of postcloacals. Testis coiled extending up to middle of oesophagus and then reflexed. Spicules very unequal, similar and slender; left spicule more than half body length, measuring 4.20–4.64; right spicule 0.19 long. Spicule ratio 1:23.3. Ratio of left spicule to body 1:1.7.

Female: Body length 13.2–14.3, width 0.13–0.15. Muscular and glandular portions of oesophagus 0.27–0.29 and 2.03–2.27 respectively. Tail 0.11–0.15, conical, tapering to a rounded tip. Vulva at 0.17–0.22 from posterior end, with circular lips. Vagina long and coiled. Gonads didelphic. Uteri voluminous, filled with numerous eggs, 31–35×17–21 μ.

Host: Terpsiphone paradisi ceylonensis (ZaruDny & HarmS)

Site: Beneath the lining of the gizzard
Locality: Azamgarh, U. P.

Relationships: Viguiera terpsiphonei n.sp. comes closest to V. leiperi and V. dorsti but differs from both of them markedly in the shape of the head and en face view and in number and arrangement of cloacal papillae.

Key to species of Viguiera

1. Spicule ratio 1:5 or less .......................... 2
   Spicule ratio 1:20 or more .......................... 5
2. Spicule ratio 1:4 .............................. buckleyi
   Spicule ratio 1:5 .............................. 3
3. Two pairs of submedian cephalic papillae ........................... 4
   Four pairs of submedian cephalic papillae ..................... vulvoinflata
4. Lateral cephalic papillae absent ........................... viduae
   Lateral cephalic papillae present ........................... euryoptera
5. Buccal capsule 100 μ long ................................ osmanhilli
   Buccal capsule 24–32 μ long ............................. 6
6. Head provided with 4 pairs of submedian horn-like processes .......... terpsiphonei n. sp.
7. Eleven pairs of precloacal papillae; sessile papillae absent at tip of tail ........................ leiperi
   Six precloacal papillae on one side and 7 on the other; 4 pairs of sessile papillae present at tip of tail ........................ dorsti

The authors are thankful to Professor S. Mashhood ALAM, Head, Department of Zoology, Aligarh Muslim University for providing the necessary laboratory facilities.

REFERENCES