

PARAMPHISTOMUM İCHİKAWAI FUKUI, 1922
(TREMATODA: PARAMPHISTOMIDAE) IN SHEEP IN TURKEY

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Türkiye'de koyunlarda *Paramphistomum ichikawai* Fukui, 1922 (Trematoda: Paramphistomidae) bulgusu.

Özet: Bugüne kadar Türkiye'de ruminantlarda sadece *Paramphistomum cervi* Zeder, 1790 ve *Calicophoron daubneyi* Dinnik, 1962 türlerinin varlığı kesinlik kazanmıştır. Bu çalışmada ilk kez koyunlarda *Paramphistomum ichikawai* Fukui, 1922 tespit edilmiştir. Parazitin detaylı bir tarifi yapılmış olup, teşhiste kullanılan en belirgin özellikler fotoğraflarla gösterilmiştir.

Summary: Only the species *Paramphistomum cervi* Zeder, 1790 and *Calicophoron daubneyi* Dinnik, 1962 have become definite until today in ruminants in Turkey. *Paramphistomum ichikawai* Fukui, 1922 was found for the first time in sheep in this study. A detailed description was given and the most distinct characteristics used in identification were illustrated.

Introduction

Limited knowledge is present on the amphistomum species of ruminants in Turkey. The following species were found in ruminants in previous studies; *Paramphistomum cervi* Zeder, 1790 (1, 5-7,9-11, 13), *Paramphistomum epiclitum* Fiscoeder, 1904 (6), *Paramphistomum leydeni* Näsmark, 1937 (Eduardo, 1980) (5), *Paramphistomum (Calicophoron) daubneyi* Dinnik, 1962 (7), *Paramphistomum (Calicophoron) microbothrium* Fiscoeder, 1901 (6) and *Paramphistomum (Calicophoron) clavula* Näsmark, 1937 (6). The diagnosis of the specimens were largely based on the results taken from some

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research centers abroad. However, there was no a consensus on the identification of the species between the centers. Nevertheless, only the species *Paramphistomum cervi* and *Calicophoron daubneyi* were confirmed by the present author (2) in an investigation carried out in Ankara slaughter house. Further studies were necessary to reveal the amphistomid species found in ruminants in that country.

On the other hand, the biology of *P. cervi* had been studied experimentally by Burgu (1) in sheep in Eskişehir Çifteler State Farm. The fresh water snail, *Planorbis planorbis*, was found as intermediate host of *P. cervi* in her investigation.

In later years, another Planorbid snail, *Gyraulus laevis*, was found to be naturally infected with the development stages of Paramphistomes in the same region (8).

In this study, a collection obtained from sheep in that region was re-examined.

Material and Methods

The material used in this study was ensured from Dr. Burgu's (1) private collection which obtained from sheep slaughtered in Çifteler State Farm Abattoir in (1979). The parasites had been fixed and stored in 10 % formaline and identified as *P. cervi* by an authority.

The samples were examined under stereo microscope and those having a larger and well developed genital opening than the others were separated for identification. Median sagittal sections 8-12 μ .m. in width were prepared, stained with haematoxylin and eosin and mounted in permount. The sections were examined in light microscope at 80x magnification. The diagnosis was based on the descriptions by Näsmark (12), Sey (14, 15), Eduardo (5) and Dinnik (4).

Results

Two out of the parasites examined were *Paramphistomum ichikawai* Fukui, 1922. This was the first record of its occurrence in sheep in Turkey.

Description: Paramphistominae, *Paramphistomum*. Body conical, 5,68-5,78 mm. long, 1,95-2,40 mm. in greatest width.

Acetabulum subterminal, external diameter 1, 26–1, 36 mm. in the dorso–ventral direction; ratio to body length $1/4,2$ to $1/4,6$; of the pisum type (Sensu Näsmark (12)) in median sagittal section (Fig. 1); number of circular muscle units, d.e.c. 1, 14–15; d.e.c. 2, 8–9; d.i.c., 41–44; v.e.c., 16–18; v.i.c., 48–50; m.e.c., 10–11.

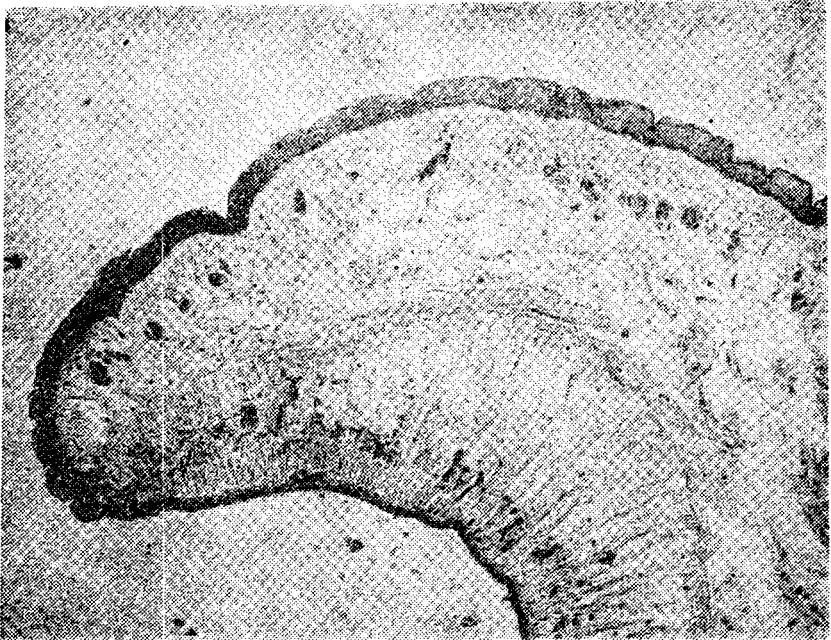


Fig. 1. Pisum type of acetabulum.

Pharynx 0,66–0,72 mm. long, 0, 46–0,48 mm. wide; ratio to body length $1/8, 02$ to $1/8, 60$; of the Calicophoron type (Sensu Dinnik (4)) in median sagittal section (Fig. 2).

Oesophagus 0,39 mm. long, nearly straight; musculature of wall of moderate thickness, no bulb or posterior sphincter.

Testes shallowly lobed, tandem in posterior two third of the body; anterior testis 0,80–0,91 mm. long, 1,10–1,30 mm. wide in the dorso–ventral direction; posterior testis 0,74–0,78 mm. long, 1,06–1, 13 mm. wide in the dorso–ventral direction; pars prostatica 0,26–28 by 0,20–0,26 mm. in size.

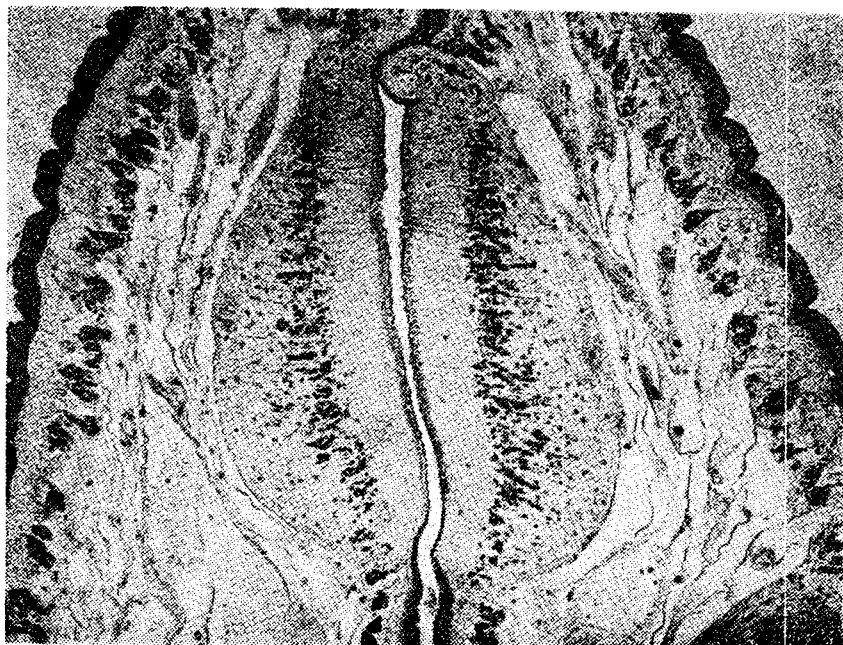


Fig. 2. Calicophoron type of pharynx.

Ovary 0,32-0,41 by 0,29-0,36 mm. in size. Vitellaria confluent dorso-medially in its anterior limit.

Genital pore at a level posterior to oesophageal bifurcation; genital opening of the ichikawai type (Sensu Näsmark (12)) in median sagittal section (Fig. 3).

Discussion and Conclusion

Some of the species, such as *P. epiclitum*, *P. (C.) microbothrium* and *P. (C.) clavula*, found in ruminants in Turkey were considered as misidentified (2). On the other hand, *P. leydeni* had already been accepted as a synonym of *P. cervi* by the present author in his earlier papers (2, 3).

P. ichikawai has several well-definable morphological features seen in median sagittal sections (structure of the genital opening, number and arrangement of the d.e.c. 2 muscle units of acetabulum). On this basis, it is easily discernible from the other Paramphistomids.



Fig. 3. Ichikawai type of genital opening.

However, the incidence of *P. ichikawai* seems to be at a very low rate among the parasites in the collection. For that reason, it is fairly hard to study the biology of this species in the region. But, it is expected that this subject will not stay as an enigma for long time.

Further studies should be carried out especially in the different regions of the country to reveal the whole amphistomid species found in ruminants.

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References

1. Burgu, A. (1981). *Studies on the biology of Paramphistomum cervi* Schrank, 1790 in sheep in the district of Eskişehir Çifteler State Farm. A.Ü. Vet. Fak. Derg., 28 (1-4): 50-71.

2. Coşkun, Ş.Z. (1987). *Ankara Mezbahasında kesilen ruminantlarda paramphistomiasis'in yayılışı ve görülen türler*. DOĞA Tr. Vet. ve Hay. D. (in press).
3. Coşkun, Ş.Z. and Sencer, O. (1987). *Scanning electron microscopic examination of the tegumental surface of two Paramphistomid species (Trematoda: Paramphistomidae)*. A.Ü. Vet. Fak. Derg. (in press).
4. Dinnik, J.A. (1964). *Paramphistomum sukumum sp. nov. and other stomach-flukes from cattle in the Sukumaland area of the Lake Region, Tanganyika*. Parasitology, 54: 201-209.
5. Eduardo, S.L. (1980). *The taxonomy of the family paramphistomidae Fischeoder 1901 with special reference to the morphology of species occurring in ruminants* Doctorate thesis, Üniv. London. 1-563.
6. Güralp, N. (1981). "Helmintoloji" Ankara Üniversitesi Basımevi, Ankara.
7. Güralp, N. and Tınar, R. (1984). *Trematodiasis in Turkey: Comparative efficacy of triclabendazole and niclofolan against natural infections of Fasciola hepatica and F. gigantica in sheep*. J. Helminth., 58: 113-116.
8. Kamel, E.G. and Burgu, A. (1986). *First record of the fresh water snail Gyraulus laevis (Alder) naturally infected with Paramphistomum cercariae from Turkey*. A.Ü. Vet. Fak. Derg., 33 (3): 352-362.
9. Kurtpınar, H. (1956). *Erzurum, Kars ve Ağrı vilayetleri sığır, koyun ve keçilerinin yaz aylarına mahsus parazitleri ve bunların doğurdukları hastalıklar*. Türk vet. Hekim. Dern. Derg., 120-121: 3226-3232.
10. Kurtpınar, H. (1957). *Erzurum, Kars ve Ağrı vilayetleri sığır, koyun ve keçilerinin yaz aylarına mahsus parazitleri ve bunların doğurdukları hastalıklar*. Türk vet. Hekim. Dern. Derg., 124-125: 3320-3325.
11. Merdivenci, A. (1959). *Ehli koyun (Ovis aries) larımızda bulunduğumuz Paramphistomum cervi (Zeder, 1790 / Schrank, 1790) (Fam. Paramphistomidae)*. Türk vet. Hekim. Dern. Derg., 29-12-24.
12. Näsmark, K.E. (1937). *A revision of the trematode family paramphistomidae*. Zool. Bidr. Upps., 16: 301-565.
13. Oytun, H.Ş. (1961). "Genel Parazitoloji ve Helmintoloji" Ege Matbaası, Ankara.
14. Sey, O. (1974). *On the species of Paramphistomum of cattle and sheep in hungary*. Acta. vet. hung., 24-37.
15. Sey, O. (1980). *Revision of the Amphistomes of european ruminants*. Parasit. Hung., 13: 13-25.