

Case report of a dyspneic red-billed hornbill parasitized by cyclocoelid trematodes in Jurong Bird Park, Singapore

Chiharu OKUMURA¹, Takuro HIRAYAMA², Masayoshi KAKOGAWA^{2,3}, and Mitsuhiro ASAKAWA²

¹ Jurong Bird Park, 2 Jurong Hill, 628925, Singapore

² Department of Pathobiology, School of Veterinary Medicine, Rakuno Gakuen University

³ Kobe Animal Kingdom Co. Ltd., Minato-jima Minami-machi, Kobe

ABSTRACT

On January 2013, a female red-billed hornbill, *Tockus erythrorhynchus*, kept in Jurong Bird Park, Singapore, was admitted with severe dyspnea with high pitch sound. It vomited reddish fluid and was recumbent. It stood up for a few minutes after oxygenation, but became unresponsive again and died shortly after. At necropsy, many trematodes were collected from the air-sacs, lungs and trachea. Based on their morphology, the trematodes were identified as *Szidatitrema* sp. (Cyclocoelidae). This is the first record of a cyclocoelid species from the red-billed hornbill. Taking the life cycle of the family Cyclocoelidae into consideration, the case might have swallowed a certain snail with the metacercaria of the trematode. There has been no report on the pathological effect to the host bird by the trematode, but the severe respiratory symptom found in the present case might be provoked by the trematode.

Keywords : red-billed hornbill, *Tockus erythrorhynchus*, *Szidatitrema*, respiratory symptom, new host record, Singapore.

On 16 January 2013, an originally free-ranging and mature female red-billed hornbill, *Tockus erythrorhynchus*, kept at Jurong Bird Park, Singapore, was admitted for severe dyspnea with a high pitch sound. It vomited reddish fluid and was recumbent. It stood up for a few

minutes after oxygenation, but became unresponsive again and died shortly after. The necropsy was performed, and about 50 trematodes were obtained from the air-sacs, lungs and trachea (Fig. 1). These trematodes were washed and compressed to flatten them. Then

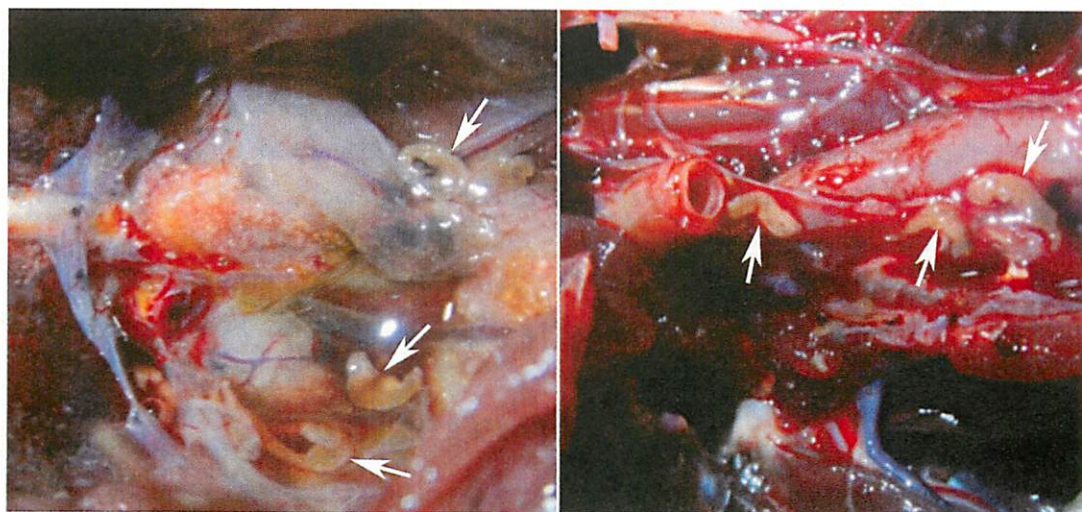


Fig. 1. Cyclocoelid trematodes parasitizing in the air-sac (left) and trachea (right) of a red-billed hornbill kept in Jurong Bird Park, Singapore. Representative worms are indicated by arrows.

the specimens were fixed and kept in 70 % ethanol, stained with Semichon's aceto-carmin, and mounted with Canada balsam (Fig. 2).

Body, unarmed, fusiform in shape without suckers, 5.2 mm in length and 1.7 mm in width; pharynx muscular, 200 μ m in diameter; intestinal ceca fused posteriorly to form a cyclocoel; testes slightly obliquely tandem, existing near posterior end of body, anterior testis smaller than posterior one, 230 μ m and 300 μ m in diameter, respectively; genital pore ventral at post-pharyngeal; ovary round, 300 μ m in diameter, forming a triangle with the two testes, posterior to the posterior testis; uterine coils extending laterally beyond ceca; uterine eggs 50 μ m \times 33 μ m in size; vitelline follicles distributed between ceca and lateral edges along nearly all length of the worm, reaching beyond level of cecal bifurcation anteriorly but non-uniting posteriorly. The specimens were deposited in Jurong Bird Park, Singapore.

This trematode belongs to the family Cyclocoelidae because it had the posteriorly united intestinal ceca and lacked oral and ventral suckers [1-6]. In the family, 6 subfamilies are currently recognized [2, 3]. The present trematode belongs to the subfamily Szidatitreminae including only one genus *Szidatitrema*, because the ovary forms a triangle with the two testes, and is post-testicular. Among species currently assigned to the genus *Szidatitrema* [3], this taxon seems to be similar with *Szidatitrema philomachii* because of the sizes of testes, or *Szidatitrema yamagutii* because of the sizes of an ovary and eggs, and a postovarian space, but final species identification needs additional specimens. We are planning to specify the species in future by re-collection of the trematode in the zoo and/or wild birds. To date, all known species of the genus *Szidatitrema* have been reported from the Old World birds [3]. To the best of our knowledge, this is the first record of the cyclocoelid trematode obtained from the red-billed hornbill. Taking the life cycle of the family Cyclocoelidae into consideration [6], the case might have swallowed snails containing the metacercaria of the trematode. There has been no report on the pathological effect to the host species by the cyclocoelid trematodes, but, at least, the present case had severe

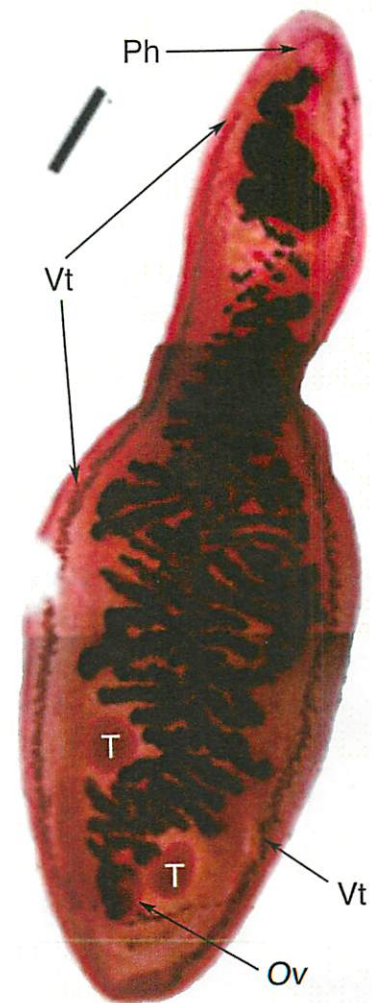


Fig. 2. A mounted specimen of *Szidatitrema* sp. (Cyclocoelidae) collected from the red-billed hornbil. Scale bar = 0.5 mm. Ov, Ovary; Ph, Pharynx; T, testis; and Vt, vitelline follicle.

respiratory symptom probably due to the parasitism.

The present authors thank Prof. Dr. Dronen, N. O., Texas A&M University, U.S.A. for giving useful comments for the present taxon. The present study was supported in part by the Supported Program for the Strategic Research Foundation at Private Universities (2013-2017) and a Grant-in-Aid (No. 26460513) of the Ministry of Education, Culture, Science and Technology, Japan.

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Correspondence : Mitsuhiro ASAKAWA, School of Veterinary Medicine, Rakunou Gakuen University, Ebetsu, Hokkaido 069-8501, Japan.
E-mail : askam@rakuno.ac.jp

シンガポール・ジュロン鳥類公園のアカハシコサイチョウ (*Tockus erythrorhynchus*) で確認された Cyclocoelidae 科吸虫について

奥村 ちはる¹、平山 琢郎²、水主川 剛賢^{2,3}、浅川 満彦²

¹シンガポール・ジュロン鳥類公園、²酪農学園大学 獣医学群 獣医学類、³神戸どうぶつ王国

要 約

2013年1月、シンガポールのジュロン鳥類公園で飼育するアカハシコサイチョウ (*Tockus erythrorhynchus*) が著しい呼吸促進ならびに赤色液状物吐出を主徴とした呼吸器症状を呈して斃死した。この個体の気嚢および肺・気管から Cyclocoelidae 科吸虫が発見された。*Szidatitrema* 属と同定されたが、種同定は良好な標本の再採集の機会を待ちたい。本科吸虫の生活史の特色として、中間宿主となる貝内にメタセルカリア寄生も起こることが知られていることから、そのような貝類摂取による感染が推測される。この鳥種から Cyclocoelidae 科吸虫が発見されたのは初めてであった。少数寄生では宿主に与える影響は小さいと考えられるが、今回の症例は呼吸困難な状態で斃死し、剖検で呼吸器系に多数虫体が確認されていたことから、死因の一部となっていたことが考えられた。

Keywords : アカハシコサイチョウ、*Tockus erythrorhynchus*、*Szidatitrema*、呼吸困難、新宿主記録