

Human *Mammomonogamus laryngeus* Infection (Syngamosis) : The second case report in Thailand

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Abstract : A case of bronchial infection with *Mammomonogamus laryngeus* in a 17-year-old man in Central Thailand is described. Following presentation with chronic unproductive cough, haemoptysis and weight loss, two pairs of worms were expelled. Treatment with albendazole resulted in resolution of the symptoms. Some aspects of *Mammomonogamus laryngeus* infection related to human parasitism, diagnostic and the approach, treatment, and prophylaxis are also discussed.

Key words : *Mammomonogamus laryngeus*, Human Syngamosis, *Syngamus laryngeus*, Case report, Parasitic infection

เรื่องย่อ : การติดเชื้อพยาธิ *Mammomonogamus laryngeus* (Human Syngamosis) : รายงานในผู้ป่วยชาย รายที่ 2 ที่พบในประเทศไทย

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รายงานผู้ป่วยชายไทยอายุ 17 ปี มีอาการของระบบทางเดินหายใจที่เกิดจากพยาธิ *Mammomonogamus laryngeus* ผู้ป่วยมีอาการไอเรื้อรัง ไอเป็นเลือด และมีน้ำหนักตัวลดลง จากการตรวจเสมหะ พบว่ามีพยาธิ ที่มีลักษณะอยู่กันเป็นคู่ 2 คู่ ผู้ป่วยได้รับการรักษาด้วยยา albendazole ทำให้มีอาการดีขึ้น รายละเอียดเกี่ยวกับพยาธิ ในแง่ต่างๆ เช่น การวินิจฉัย การรักษา การป้องกัน ได้นำเสนอเพื่อเป็นกรณีศึกษาต่อไป

INTRODUCTION

Mammomonogamus laryngeus is not pathogenic in human beings. The nematode worm is a parasite commonly found in the respiratory tract of cattle^{1,2}, water buffalo, occasionally sheep, goats and rarely in man¹. Most cases of human syngamosis originated in the Caribbean Islands or Brazil, about half of which were found on the island of

Martinique³⁻⁶. In Thailand, the first case of *M. laryngeus* infection was identified and reported after the infection occurred in Malaysia⁷. Little clinical information about this parasite is available. The case described here is the second case of human syngamosis to be reported in Thailand. A review of the clinical manifestations in humans, diagnostic approach and treatment are also discussed.

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CASE REPORT

A 17-year-old male presented at the outpatient clinic of Nam Naow Hospital, Petchaboon Province, with a sore throat and chronic dry cough for 2 months after returning from a 3-month trip to Malaysia. While staying in Malaysia, he and his friends, including his father, went hunting and gathering herbs in the rainforest. His symptoms began in Malaysia before returning to Thailand. During the second month in Malaysia, he became sick with a cough, thick mucoid sputum, followed by weight loss and malaise without pyrexia. The others also developed an unproductive cough. He developed haemoptysis two days before coming to Nam Naow Hospital.

An initial physical examination reported his blood pressure at 120/80 mm Hg, respiratory rate 24-28 times per minute, pulse rate 84 times per minute with no pyrexia. In general appearance he was described as having good conscious, dyspnea, tachypnea, no cyanosis, no pallor, and no allergic skin reaction. He had a prolonged expiratory phase with rhonchi over both lung fields. His cardiovascular system report was normal S1 and S2, no murmur, point of maximum intensity (PMI) at 4th intercostal space midclavicular line.

The initial treatment was administration of bronchodilator via nebulizer resulting in improvement of dyspnea and tachypnea. A chest radiograph taken on admission showed no definite pulmonary infiltration and hyperaeration. Sputum was negative for acid fast bacilli. Other laboratory tests revealed haemoglobin of 13.94 g/dl, haematocrit of 41%, white cell count of 142,000/mm³ with 69% neutrophils, 22% lymphocytes, 8% eosinophils and 1% monocyte. Platelet was adequated and non-reactive for anti HIV by ELISA (enzyme-linked immunosorbant assay). The prescription given was cough suppressant, mucolytics and short acting bronchodilator. On the third day of admission at Nam Naow Hospital, he developed thick mucoid sputum with observable red-brown worm-like objects.

The worms were sent to the Department of Parasitology, Faculty of Medicine Siriraj Hospital, Mahidol University for species identification. The sputum examination was done with fresh preparation in normal saline solution. Results showed a white

blood count of 30-50 cell per HD, red blood count of 10-20 cell per HD, and no *Paragonimus* or other parasites were found. Stool examination revealed hookworm ova, WBC 0-1 cell per HD, and only 1-2 cell per HD of RBC. His symptoms initially improved after treatment with albendazole 800 mg per day for 5 days.

PARASITOLOGICAL DESCRIPTION

The worms taken from the sputum of the patient during admission were identified as *Mammomonogamus laryngeus*. The males and females found in permanent copulation looked bright red, and examination by the naked eye showed that these pairs had a typical Y-shape. The male length was 3.0 to 6.3 mm, width 360 to 380 μ m, with or without spicules. Spicules were 23 to 30 μ m long. The female length was 8.7 to 23.5 mm, width 550 to 570 μ m. The vulva was in the anterior part of the body⁸. The worm recovered in this case was in copula (Figure 1). The male worm was 4.8 mm long with a maximum width of 0.43 mm. The female worm was 15.0 mm long with a maximum width of 0.70 mm. A thick muscular wall, the cuticular rim, and several teeth were seen in the buccal cavity (Figure 2). Under the microscope, the mouth opening was wide, without leaf-crowns, and the buccal capsule was cup-shaped. The teeth of *M. laryngeus*, which are not using for attachment to the host, were small and located deep in the buccal cavity⁹. The eggs in the female measured 75 to 80 μ m by 45 to 60 μ m (Figure 3), and had a thickened operculum at either pole.

DISCUSSION

To date, only 23 cases of human syngamosis have been reported in electronic citations. On Martinique, in 37 patients chronic cough was the initial reason for seeking medical treatment⁵. In Thailand, the first reported case of human syngamosis occurred in a 32 year old Thai farmer from Khon Kaen Province who spent four months cutting wood in the rainforest of Kalantan state, Malaysia. In that report, the parasites were diagnosed as *Mammomonogamus laryngeus*, the same species as those in this report. Since then, there have been only four other

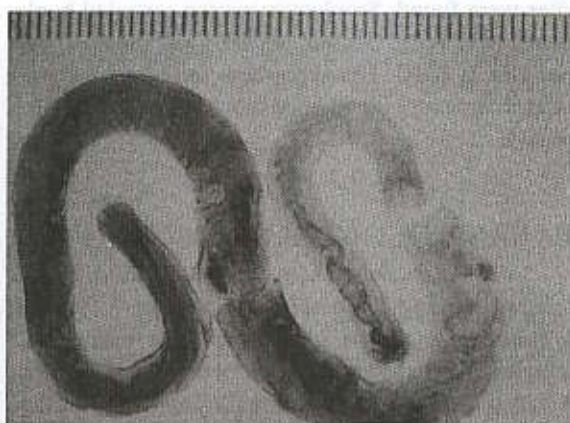


Figure 1. The worm recovered in this case was in copula.

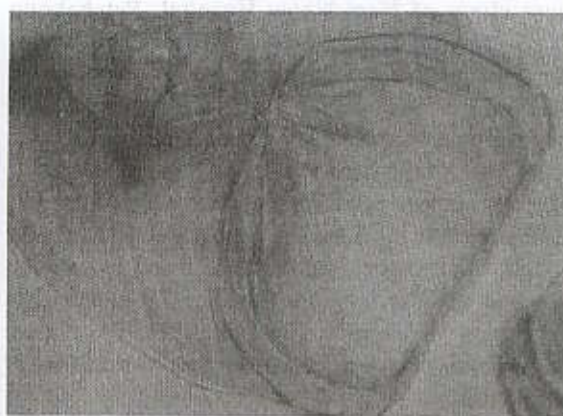


Figure 2. A thick muscular wall, the cuticular rim, and several teeth were seen in the buccal cavity.

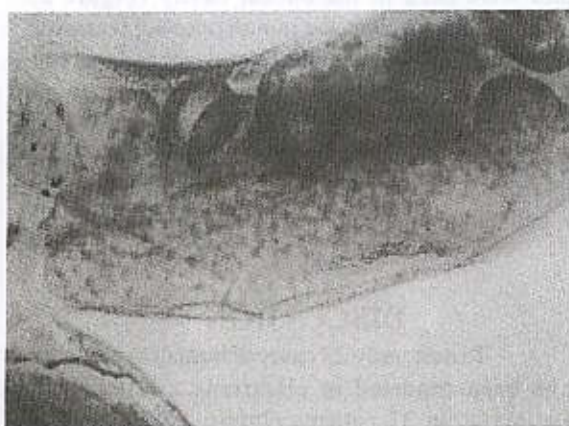


Figure 3. Eggs in the female.

reports of *M. laryngeus* infection in humans: one from the state of Sao Paulo, Brazil¹⁰, another case from Brazil again two years later¹¹, a female from New York, USA who came back from a 1-week trip to Jamaica¹², and most recently, the first recognised case of human syngamiasis in Korea¹³.

Patients with *M. laryngeus* infection have few abnormal laboratory test results. Eosinophilia has been an inconsistent finding. In our case, the patient had eosinophil counts greater than 6% or eosinophilia. This may be a clue for diagnosis of parasitic infection. Only 4 of 12 patients for whom eosinophil data were available has eosinophilia^{6,7,10,14-18}. The clinical presentation of this case is similar to that of previous cases^{7,10,12,15,18-20}. The diagnosis of *Mammomonogamus* infection is based on morphologic characteristics of intact adult worms, or made by fiberoptic bronchoscopic examination which reveals the Y-shaped worms in the bronchi or based on the characteristic eggs in the sputum or feces. Eggs in distilled water at room temperature develop to a first stage larva by the seventh day, and motile larva by the tenth day⁷. The diagnosis of human

syngamosis is much easier if the worm is expelled with the sputum.

However, physicians must keep in mind the possibility of syngamosis in patients with symptoms of asthma who have recently traveled to endemic areas^{19,21}. Therapeutic use of treatment of *Mammomonogamus* infection such as with thiabendazole²¹ and mebendazole⁷ has been reported. In this case albendazole also successfully eliminated the infection.

SUMMARY

Mammomonogamus laryngeus' life cycle is unknown¹. It has been proposed that it is similar to that of the bird parasite *Syngamus trachea*. Infection may occur directly by ingestion of infective eggs or larvae. However, it is well established that severe field infections are associated with the ingestion of hosts such as earthworms, snails, slugs, and arthropods (e.g. flies). Gapeworm larvae may encyst and survive for years within an invertebrate host¹. In cattle, *M. laryngeus* has been found on the posterior side of the

epiglottis. Field observations of cattle in Mindanao revealed that adult *M. laryngeus* developed on the epiglottis of a tracer calf that had been in pasture for 30 days and then kept away from possible nematode infection for 28 days²².

Prophylaxis of *Mammomonogamus* infection is possible since the human is only an accidental host. The nematode *M. laryngeus* is found in wild and domestic birds and mammals in the tropics and subtropics^{1, 21}. Contact with or being close to these kinds of animals should be avoided since the life cycle of *M. laryngeus* has been unclearified so far¹. Infection may occur directly by ingestion of transport hosts.

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REFERENCES

- Kaufmann J. Parasitic infections of domestic animals: A diagnostic manual. Basel; Boston: Birkhauser Verlag; 1996: 99-100.
- Olsen OW. Animal parasites: their life cycles and ecology. 3rd ed. Baltimore: University Park Press; 1974.
- Beaver PC, Jung RC, Cupp EW. Clinical parasitology. 9th ed. Philadelphia: Lea & Febiger; 1984.
- Grell GA, Watty EI, Muller RL. Syngamus in a West Indian. Br Med J 1978; 2: 1464.
- Mornex JF, Magdeleine J, De Thore J. Human Syngamus (*Mammomonogamus nasicola*) infestation as a cause of chronic cough in Martinique. 37 cases (author's transl). Nouv Presse Med 1980; 9: 3628.
- Weinstein L, Molavi A. Syngamus laryngeus infection (syngamosis) with chronic cough. Ann Intern Med 1971; 74: 577-80.
- Pipitgool V, Chaisiri K, Visetsupakarn P, Srigan V, Maleewong W. Mammomonogamus (Syngamus) laryngeus infection: A first case report in Thailand. Southeast Asian J Trop Med Public Health 1992; 23: 336-37.
- Levine ND. Nematode parasites of domestic animals and of man. 2nd ed. Minneapolis, Minn: Burgess Pub Co; 1980.
- Anderson RC, Chabaud AG, Willmott S. CIH Keys to the Nematode Parasites of Vertebrates - No.1 - General Introduction - Glossary of Terms - Keys to Subclasses, Orders and Superfamilies: Commonwealth Institute of Helminthology; 1974.
- de Lara Tde A, Barbosa MA, de Oliveira MR, de Godoy I, Queluz TT. Human syngamosis. Two cases of chronic cough caused by *Mammomonogamus laryngeus*. Chest 1993; 103: 264-65.
- Freitas AL, De Carli G, Blankenheim MH. Mammomonogamus (Syngamus) laryngeus infection: A new Brazilian human case. Rev Inst Med Trop Sao Paulo 1995; 37: 177-79.
- Nosanchuk JS, Wade SE, Landolf M. Case report of and description of parasite in *Mammomonogamus laryngeus* (human syngamosis) infection. J Clin Microbiol 1995; 33: 998-1000.
- Kim HY, Lee SM, Joo JE, Na MJ, Ahn MH, Min DY. Human syngamosis: The first case in Korea. Thorax 1998; 53: 717-18.
- Basden RD, Jackson JW, Jones EI. Gapeworm infestation in man. Br J Dis Chest 1974; 68: 207-9.
- Birrell DJ, Moorhouse DE, Gardner MA, May CS. Chronic cough and haemoptysis due to a nematode,

- "*Syngamus laryngeus*". Aust N Z J Med 1978; **8**: 168-70.
16. Ho Thi S, Junod C, Philbert M. Parasitologic notes on *Syngamus laryngeus* Railliet 1899 and on human syngamiasis. A case of bronchial syngamiasis in man. Review of published cases. Description of the eggs. Bull Soc Pathol Exot Filiales 1970; **63**: 488-97.
17. Severo LC, Conci LM, Camargo JJ, Andre-Alves MR, Palombini BC. Syngamosis: Two new Brazilian cases and evidence of a possible pulmonary cycle. Trans R Soc Trop Med Hyg 1988; **82**: 467-68.
18. Timmons RF, Bowers RE, Price DL. Infection of the respiratory tract with *Mammomonogamus* (*Syngamus*) *laryngeus*: A new case in Largo, Florida, and a summary of previously reported cases. Am Rev Respir Dis 1983; **128**: 566-69.
19. Cunnac M, Magnaval JF, Cayarci D, Leophonte P. Three cases of human syngamiasis in Guadeloupe. Rev Pneumol Clin 1988; **44**: 140-42.
20. Gardiner CH, Schantz PM. *Mammomonogamus* infection in a human. Report of a case. Am J Trop Med Hyg 1983; **32**: 995-97.
21. Leers WD, Sarin MK, Arthurs K. Syngamosis, an unusual cause of asthma: the first reported case in Canada. Can Med Assoc J 1985; **132**: 269-70.
22. Van Aken D, Lagapa JT, Dargantes AP, Vercruysse J. *Mammomonogamus laryngeus* (Railliet, 1899) infections in cattle in Mindanao, Philippines. Vet Parasitol 1996; **64**: 329-32.