

RESEARCH NOTE

BRUGIA MALAYI IN A NATURALLY INFECTED CAT FROM NARATHIWAT PROVINCE, SOUTHERN THAILAND

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Abstract. *Brugia malayi*-like from an infected cat from Narathiwat Province, southern Thailand was identified intensively by microfilarial morphometry, acid phosphatase activity, and adult morphology. The results indicated that both microfilarial and adult characteristics conformed to the topotypic *B. malayi*.

Filariasis due to *Brugia malayi* is still a public health problem in many countries of Asia, particularly in India, Indonesia, Malaysia, Philippines, Sri Lanka and Thailand (WHO, 1992). So far, at least four physiological types have been declared, *ie* the nocturnally periodic, nocturnally subperiodic (Wilson *et al*, 1958), diurnally subperiodic and non-periodic (Sudjadi *et al*, 1984). In Thailand, only two, the nocturnally subperiodic and diurnally subperiodic types, have been differentiated (Division of Filariasis, 1998). For the nocturnally subperiodic type, the endemic areas are located in five provinces of southern Thailand, *ie* Nakhon Si Thammarat, Phattalung, Pattani, Yala and Narathiwat. The areas are rural semi-forest, and *Mansonia uniformis* and *Ma. bonnae* are the primary vectors in open swamps and swamp-forest, respectively, while *Ma. dives*, *Ma. indiana*, *Ma. annulata* and *Ma. annulifera* are considered as secondary vectors. For the diurnally subperiodic type, the endemic area is limited to Surat Thani Province, southern

Thailand, and *Coquilletidia crassipes* is the important vector (Guptavanij *et al*, 1971; Division of Filariasis, 1998). Comparison among six provinces, Narathiwat is the most highly endemic area, with approximately 50% of reported brugian filariasis cases. This may be a result of suitable mosquito breeding-places or large areas of swamp, and the existence of animal reservoir-hosts. Blood examination of both stray and domestic cats in Narathiwat Province revealed that 104 of 2,515 cats (4.13%) were positive for *B. malayi*-like microfilariae (Phantana *et al*, 1995), but no exact species identification of the parasite has been carried out. The possibility that this *B. malayi*-like was *B. pahangi*, a common, natural parasite of cats (Buckley and Edeson, 1956), needs to be considered. In this paper, we have confirmed the *B. malayi* in a naturally infected cat from Narathiwat Province by means of microfilarial morphometry, acid phosphatase activity, and adult morphology.

One microfilaremic female cat from an endemic area in Narathiwat Province, southern Thailand was examined in the present study. The microfilariae found in the Giemsa-stained thick blood smear were tentatively identified as *B. malayi* by staff of the Filariasis Control Center in Narathiwat Province. The standard

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smear method (Sasa, 1976) was used to prepare the microfilariae. The Giemsa-stained microfilariae were examined under a compound microscope and the dimensions of the body were assessed using camera lucida drawing. For microfilarial acid phosphatase activity, the blood films were processed following the method of Barka and Anderson (1963). *B. pahangi* microfilariae were obtained from a naturally infected cat at Lat Krabang district, an outskirt area of eastern Bangkok outside the endemic area for *B. malayi* were used as the control. For adult worms, sixty harvested infective stages from *Aedes togoi*-infected *B. malayi*-like microfilariae were suspended in 0.5 ml of Hanks' balanced salt solution (HBSS) and inoculated intraperitoneally into a male Mongolian jird (*Meriones unguiculatus*). Four months after inoculation, the jird was killed, and peritoneal and pleural cavities were rinsed several times with HBSS to recover any worms. The harvested adult worms were killed with hot 70% ethanol, mounted in glycerine on a cavity slide and examined under a compound microscope.

Morphometric measurement of thirty microfilariae in Giemsa staining revealed that the average and range of body length, body width at the nerve ring and inner body length were 221.30 (189.54-242.19) μm , 4.51 (3.33-5.55) μm and 32.29 (21.06-42.12) μm , respectively. The average inner body length of 32.29 μm conformed to *B. malayi* [*B. malayi* = 30.7 (24-34) μm , *B. pahangi* = 53.1 (44-63) μm (Sivanandam and Fredericks, 1966)]. Acid phosphatase staining demonstrated that intensely positive sites were found at amphids, excretory vesicles, anal vesicles and phasmids, and the remainder of the body showed very diffuse activity (Fig 1A). These were similar to the pattern of *B. malayi*, whereas in *B. pahangi*, the activity was found along the entire body (Fig 1B) (Yen and Mak, 1978). The examination of 11 females and 7 males showed that all adult worms had the morphological characteristics of *B. malayi*, ie the tail region of the female bore minute cuticular bosses or tubercles, which were absent from *B. pahangi*, the left spicule of the male terminated in the spatulate tip (Fig 1C), whereas it was sharply

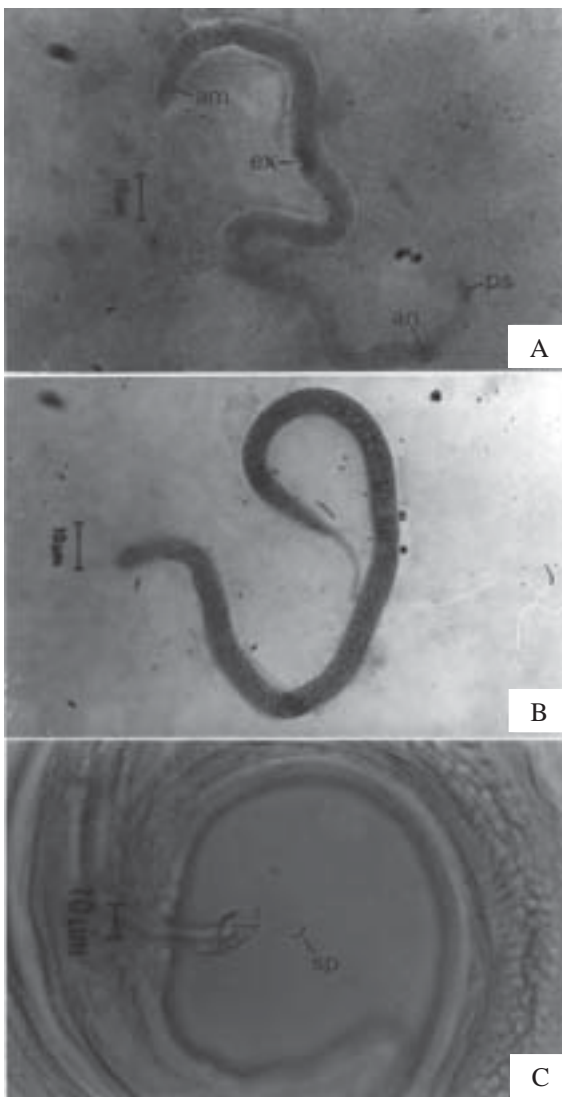


Fig 1-*B. malayi* microfilaria from cat (Narathiwat).

A) Acid phosphatase activity at amphids (am), excretory (ex) and anal (an) vesicles, and phasmids (ps). B) *B. pahangi* microfilaria from cat (Bangkok). Acid phosphatase activity along entire body (B). C) Tail end of 4-month-old adult male *B. malayi* from intraperitoneal infected jird. Showing spatulated tip of the left spicule (sp).

pointed tip in *B. pahangi* (Buckley and Edeson, 1956). Judged from the above results, it could be confidently declared that the *B. malayi*-like in cat from Narathiwat Province, southern Thailand was *B. malayi*. Further survey for the

prevalence of *B. malayi* in more cat samples needs to be determined the exact role of cats as the natural reservoir hosts of *B. malayi* prior to the application of control program in Narathiwat Province, particularly, by using once-yearly, single-dose, 2-drug treatment [albendazole (400 mg, same dose for all ages) + DEC (6 mg/kg) or albendazole (400 mg) + ivermectin (200 µg/kg)] recommend by WHO (1998).

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