THE TICK IXODES GRANULATUS INFESTS RATTUS RATTUS
POPULATING A SMALL ISLAND OFFSHORE OF SINGAPORE

PAPERNA I.*

Summary:
The ixodid tick Ixodes granulatus Supino 1897 was found infesting Rattus rattus in Semakau island, one of the small offshore islands fringing Singapore to the south. None of the examined R. rattus from the other islands fringing Singapore, or from Singapore island were found infested. Ixodes granulatus occurs, however, on Singapore island on Rattus annandalei, resident of undisturbed forested habitats. We speculate that invading black rats in Semakau replaced autochthonous sylvatic rodent population and contracted their associate tick population.

KEY WORDS: tick, Ixodes granulatus, Rattus rattus, Rattus annandalei, Singapore, offshore island.

During 1998 and in 2002, rats were trapped in Singapore and its fringing islands to study Rat-Python reticulatus transmitted Sarcocystis spp. (Paperna & Martelli, 2001; Paperna et al. 2004). Rats were trapped by 260 × 175 × 120 mm spring traps and killed by chloroform in plastic bags.

In Semakau island, one of the small (area 64.7 ha) offshore islands fringing Singapore to the south, infestation of Ixodes granulatus Supino 1897 occurred in 32% of the 22 examined black rats, Rattus rattus: in two out of 11 (18%) females and five of 11 (45%) males. Mean number of ticks per infested rat was 5.6 ± 4.4 (v > m = overdispersed); the youngest rat found infested was of 49.5 g, but there was no correlation with size (Pearson’s r = −0.15). All found ticks, in both male and female rats were either larvae or nymphs (total collected 23 nymphs, 14 larvae), eight nymphs molted to adult females, none to males.

None of the examined 48 R. rattus from the other fringing islands were found infested. Catch percentage of traps on Semakau was 63%, in only another island, it was higher, 75%, in all other islands it was lower (Paperna et al., 2004). Tick infestation was also absent from all Singapore island. Of 13 rats comprising, both adult males and females caught in Bukit Timah forest, three were infested by three-five adult ticks per rat, and additional one had multiple larval-bite lesions. Of six additional rats from the forest adjoining the Zoo, three were found infested, one with three females and a nymph, the others, each with one engorged larva. Author also experienced massive attack of larvae while walking in the central forest. Some undetected larvae succeeded to engorge and induced lesion at the attachment site.

Ixodes granulatus has been reported from wild or feral rats (R. r. diardi, R. r. jalorensis, R. exulans) only from sylvatic habitats (Kohls, 1957; Audy et al., 1960). We speculate that in Semakau the invading R. rattus replaced sylvatic rodent population, the natural hosts of this tick, and inherited their ticks.

According to Kohls 1957, I. granulatus occurs from eastern India through SE Asia – China to Okinawa (on various small mammals including species of Rattus, but not on the commensal R. rattus). Audy et al. (1960) report finding of I. granulatus in Malaysia from several sylvatic rat species, as well as Tupaiia glis, some shrews, squirrels and also from men.

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Note de recherche
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