First Report of *Rhipicephalus turanicus* from Hedgehog (*Erinaceus concolor*) in North of Iran

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**Abstract:** Recently hedgehog is receiving great attention due to being an appropriate host for transmission of some major diseases such as *Salmonella* spp. in both in medical and veterinary field. Therefore, the present study was carried out to survey ticks those infesting hedgehog. An investigation on ticks of four hedgehogs was performed from May to July 2011 in Babol. Whole crucial characters of collected samples were studied with the help of light microscope and using Estrada tick systematic keys. A total number of 62 ticks (37 males and 25 females) from three hedgehogs were gathered. The collected ticks were identified *R. turanicus*. Hedgehog can be introduced as a new reservoir of ectoparasites. Hence, more investigations and researches are required in order to know hedgehog infestations and their probable diseases in our country.

**Key words:** Tick · *Rhipicephalus turanicus* · Ectoparasite · Hedgehog · Iran

**INTRODUCION**

Ticks are considered significant in veterinary, either by acting as vectors of serious pathogens. Moreover, ticks are responsible for serious economic losses of animal owners particularly in livestock industries [1]. Not only both sexes of mature ticks are considered highly blood sucking and dermal parasites but also the stages of larva and lymph can harm their host [2]. Although most of ticks are opportunistic and they feed on a wide variety of hosts, some ticks prefer specific one [1]. The family Ixodidae (hard ticks) consists of different genus. Then genus *Rhipicephalus* belongs to this family. Africa continent is the origin of *Rhipicephalid* ticks distribution [3]. Nearly 60 species and subspecies in this genus can easily adjust themselves with forests, mountains and semi desert areas. In addition, relatively most species show little host specific, they bite a wide variety of mammals, birds and even reptiles. Some species spend their life on two hosts and some on three hosts [1]. *Rhipicephalus turanicus* is known as a three – host tick and the adults generally are abundant from late spring to summer. Adult of *R. turanicus* typically infests cattle, sheep, dogs in Mediterranean region and its infestation often occurs on sheep. Regarding wild hosts *R. turanicus* has a high tendency to the larger carnivores and some of ground- feeding birds. Immature stages generally infest hedgehogs, gerbils and murid rodents [4].

Hedgehogs are small, nocturnal animal that their body are covered with sharp needle-like and recently are receiving special attention as exotic pets. This animal can be considered as a proper host for a wide variety of parasites, bacteria, viruses and fungi. Furthermore, they can intervene in some zoonotic pathogens such as *Herpes virus, Salmonella* spp. and *Capillaria aerophila* [5, 6]. Although hedgehogs are widely distributed in our country especially in North of Iran, there is not information about ecoparasites and endoparasites of hedgehogs. Thus, the primary objective of the present study was to survey ticks those infesting hedgehogs in Iran.

**MATERIALS AND METHOD**

**Material Examined:** An investigation was carried out on four (2 male and 2 female) alive hedgehogs which were
collected from May to July 2011 from rural area of Babol city (latitude 36°32' 39" N and longitude, 52°40' 44" E) Mazandaran province, Iran. All of crucial characters were studied precisely and tick identification was performed using light microscope and specific keys of Estrada [4]. In addition, all hedgehogs were returned to their inhabitation area after examination.

**Description:** Totally 62 ticks (37 males and 25 females) were collected from three hedgehogs while one hedgehog did not show infestation. Examined specimens had the following characters: The length of unfed ticks was variable from 3.2–4.8mm. The color of collected specimens appeared relatively mid brown and the slender legs had pulvilli. In dorsal view of the gnathosoma, mouthparts were observed in anterior part. Palps and hypostome were short. Additionally, basis capituli distinctly appeared hexagonal shape and the length of palps was nearly equal to basis capituli.

The scutum of examined specimens was brown and without pattern. Moreover, both left and right sides of margin of scutum had apparent grooves with smooth texture. Eyes were present and flat and somewhat convex. Festoons in males were present and central festoon conspicuously was clear and blunt while in fed females, festoons were absent (Fig. 1). The spiracles plates are found in the posterior part of fourth legs, the entrance and tail were slightly broad, same the adjacent festoon (Fig. 2). The posterior margin of scutum in females seemed sinuous shape.

Anal shields were observed solely in males, they seemed narrow and taper with equal size and anal groove was located in posterior position (Fig. 3). In collected females ticks, cervical fields showed a large and curve shape and devoid of wrinkle. The genital aperture posterior lips formed a narrow U shape.

**DISCUSSION**

Ticks have a major role for disease transmission, anemia, dermatosis, paralysis, otoacariasis. Diseases such as Crimen – congo haemorrhagic fever, Q. fever, Boutonneuse fever, Rocky mountain spotted fever are examples that show their impact on medicine and veterinary. Thus, the study of these ticks has become a matter of the highest importance in connection with the prevention of the diseases [1].

The two genuses that have a close similarity to *Rhipicephalus* regarding basis capituli are *Boophilus* and *Dermacentor*. The first one is distinguishable from *Rhipicephalus* by lack of festoons and *Dermacentor* is instantly recognizable by its rectangular and pattern of scutum [1].

Regarding differential diagnosis and similar species, *R. sanguineus* and *R. camicsi* are closely identical to *R. turanicus*. The males of *R. turanicus*
have small shallow of cervical fields and caudal appendage in nourished males is remarkably broad and protruding whereas R. sanguineus shows a slight bulge and this character in R. camicasi does not visible. Both sexes of R. turanicus have spiracle plates which are broad in anterior and posterior part and their width is similar to adjacent festoon while in R. sanguineus and R. camicasi, the tail of spiracle plates are narrower than near festoon. The females of R. sanguineus shows a broad U shape of genital aperture posterior lips compared to R. turanicus that forms a narrower U shape [4].

Considering hedgehog ticks, two species of Ixodid tick, Ixodes hexagonus and I. ricinus are common ectoparasites of the hedgehog and I. hexagonus is a nest-dwelling species and largely specific to hedgehogs [7, 8]. Furthermore, this host can be infested by Hyalomma impeltatum, H. marginatum, H. lusitanicum and R.sanguineus [9, 10]. The only study of hedgehog ticks in Iran was carried out by Azimi, ticks of 14 hedgehogs in Tabriz rural region was surveyed, three of them were infested by R. appendiculatus which is the most important vector of Theileria parva [1, 11]. Hedgehogs may act as transport and reservoir host for some disease such as salmonellosis, leptospirosis, pulmonary capillariosis, etc [5, 6, 12, 13].

In conclusion, the examined samples were identified as a R. turanicus with considering all of significant and vital criteria according to description and systematic key of Estrada. Thus, further researches are required due to considerable unexplored area of our country in order to increase our knowledge about ectoparasites of hedgehogs and probable zoonoses and veterinary diseases.

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