



Article

Trichobothrial morphology of Theraphosidae and Barychelidae spiders (Araneae, Mygalomorphae)

JOSÉ PAULO LEITE GUADANUCCI

Universidade Federal dos Vales do Jequitinhonha e Mucuri, Departamento de Ciências Biológicas, Laboratório de Zoologia de Invertebrados, Campus JK, Rodovia MGT 367 – Km 583, Diamantina-MG, Brasil, CEP 39100-000. joseguadanucci@gmail.com

Abstract

Clavate trichobothria are present on tarsi of all Theraphosidae and some Barychelidae spiders. They are also here reported on the tibiae of some theraphosids. A comparative analysis of their occurrence is presented. Representatives of all subfamilies of Barychelidae and Theraphosidae were studied. The following morphological patterns were recognized: filiform, thickened, and clavate. The surface of these trichobothria can be plumose or non-plumose. Five patterns in the disposition of clavate trichobothria on tarsi, were recognized: 1—two parallel rows; 2—two diverging rows; 3—one narrow, long median row; 4—one wide central row, intermixed with short covering setae; 5—a short row, restricted to the distal half of the tarsus. The disposition of trichobothria on tibiae did not differ among the taxa examined, except for those on lateral surfaces, where they can form a row or be grouped. Some patterns of morphology and distribution can be used as diagnoses of subfamilies and genera (*e.g.*, Aviculariinae, *Ischnocolus*, *Heterothele*). The significance of such patterns in systematics is discussed and the usage in phylogeny is proposed.

Key words: filiform, thickened, clavate, tarantula, subfamilies

Introduction

Trichobothria are sensilla of various terrestrial arthropods and are characterized by a cup-shaped cuticular structure, named bothrium, in which the hair is inserted (Reissland & Görner, 1985). The hair may be long and thin (filiform) or short and club-shaped (clavate). Trichobothria were first reported to be sound detectors by Dahl (1883) but they can also detect substrate vibrations (Buchli, 1969; Reissland & Görner, 1985). They are present on distal three articles of the legs and pedipalps of all spiders (Millot, 1968) and rarely on the femora. In mygalomorph spiders, trichobothria have been found only on tarsi, metatarsi and tibiae (Raven, 1985).

Clavate trichobothria in spiders were first noted by Simon (1892) and have already been reported for a number of spider groups. In the Mesothelae, Murphy & Platnick (1981) noted a row of clavate trichobothria on the tarsi of the legs and palps of *Liphistius* and suggested that it is a possible synapomorphy for the genus. Platnick & Sedgwick (1984) also proposed clavate trichobothria on tarsi as synapomorphy for the genus *Liphistius* and showed congruence with male and female sexual characters. In mygalomorph spiders, clavate trichobothria on tarsi were reported for theraphosoids (Barychelidae+Theraphosidae+Paratropididae), some ctenizids and idiopids (Murphy & Platnick, 1981; Raven, 1985; Goloboff, 1993). Murphy & Platnick (1981) stated that clavate trichobothria of *Liphistius* do not resemble those of ctenizids and therefore should not be considered homologous. Goloboff (1993) noted that clavate trichobothria of mygalomorph spiders are interspersed among the filiform rather than set in a distinct row as in *Liphistius* and, thus did not consider them homologous.

Clavate tarsal trichobothria were considered a synapomorphy of Theraphosoidina with reversion in Paratropididae and parallelisms in other families (Goloboff, 1993) and have not been reported in any of the plesiomorphic mygalomorph families (Raven, 1985). Clavate trichobothria occur on the tarsi of all known theraphosid spiders. Within the Barychelidae, clavate trichobothria may be absent, very reduced in size and limited to a few ones on the tarsus mid-length, or present in a small apical group or in a line throughout the tarsus. *Melloina* is the only reported paratropidid genus with clavate trichobothria on the tarsi (Raven, 1985). Despite all of the